ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

PAPER

Vol. C, No. 16 — Thursday, April 18, 1935

To Open Bids for Government Paper on May 20

Joint Congressional Committee On Printing Calls for Bids on Paper of Various Descriptions for Supplying the Government Printing Office for the Six Months' Period Beginning July 1, 1935—Schedule Embraces 183 Lots Being the Same Number Called for in the Preceding Schedule—Bids on Envelopes Also Requested

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 17, 1935—Details are just available for the opening of bids by the Joint Congressional Committee on Printing for the six months supply of paper for the Government Printing Office beginning July 1 and for the annual supply of envelopes beginning the same date. As announced in PAPER TRADE JOURNAL last week the bids will be received on May 20.

Specifications Committee Report

The specifications committee of the Joint Congressional Committee, headed by F. P. Veitch, made the following report on specification changes:

The Committee on Paper Specifications respectfully submits its Twenty-ninth Report and the accompanying recommended schedule for paper for the public printing and binding and blank paper for the use of the Government departments and establishments in the District of Columbia for the term of six months, beginning July 1, 1935.

To comply with the request of the Commissioner of Patents for the printing of patent specifications on 80-pound, 50 percent rag Machine-finish Book Paper, as specified under Lots 20 to 22, inclusive, instead of on 25 percent rag Bond previously provided for under Lot 109, Lot 21 has been modified to take care of this requirement, and Lot 109 eliminated.

On Lots 190 to 193, inclusive, 50 percent Rag Index, white and colored, the thickness has been slightly modified in order to conform more closely to commercial practice.

This schedule embraces 183 lots, being the same number called for in the preceding schedule. The quantity estimated for the term of six months beginning July 1, 1935, is approximately 30,050,000 pounds, as compared with 16,255,000 pounds for the previous contract period of three months.

Quantity of Paper Needed

The approximate quantity of paper needed for the six months is as follows:

500,000 pounds newsprint paper.
3,555,000 pounds machine-finish book paper.
100,000 pounds antique book paper.
70,000 pounds lightweight machine-finish book paper.
230,000 pounds fifty percent rag machine-finish book paper.
15,000 pounds 75 percent rag laid antique book paper.
20,000 pounds 100 percent rag machine-finish book paper.
1.035,000 pounds supercalendered book paper.
50,000 pounds half-tone book paper.
225,000 pounds coated book paper.
20,000 pounds lithograph paper.
3,000,000 pounds mimeograph paper.
400,000 pounds U S M O safety writing paper.
8,000 pounds U S M O writing paper.
15,000 pounds safety writing paper.
4,237,500 pounds writing paper.
405,000 pounds map paper.
787,000 pounds manifold paper.
4,304,000 pounds bond paper.
590,000 pounds ledger paper.
606,000 pounds index paper.
2,500 pounds tissue paper.
230,000 pounds cover paper.
350,000 pounds manila paper.
490,000 pounds kraft paper.
110,000 pounds manila tag board.
900,000 pounds calendered tag board.
30,000 pounds manila cardboard.
110,000 sheets railroad board.
330,000 pounds bristol board.
6,000,000 pounds United States postal card bristol board.
1,000 pounds paraffin paper.
200,000 sheets gummed paper.
81,000 pounds blotting paper.
3,000 pounds stereotype molding paper.
15,000 pounds oiled manila tympan paper.
4,000 pounds plate-wiping paper.
2,000 pounds back-lining paper, for case making.
10,000 pounds high finish red sulphite.
18,000 sheets pressboard.
1,000 pounds news board.
810,000 pounds chip and strawboard.
20,000 pounds marble grained board.
36,000 pounds box board.
360,000 pounds binder's board.

(Continued on page 33)

Quebec Introduces Newsprint Price Control Bill

Steep Increases In Stumpage Dues for Offending Newsprint Companies—Sales of Farmers' Wood to be Controlled—Bureau to Secure Co-Operation of Other Provinces—Way Left Over for Companies to Set Their House In Order

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 15, 1935—Copies of the long-expected bill for the control of newsprint production in the province of Quebec have just been distributed to members of the Legislative Assembly, the sponsors being the Hon. Honore Mercier, Minister of Lands and Forests. The provisions leave no doubt as to the determination of the Government to put an end to the cut-throat competition by which the forest resources of the Province are being exploited without any reasonable return.

A significant feature of the measure is the final clause, which says that the act shall come into force on such date as it may please the Lieutenant-Governor to fix by proclamation. Reading this provision in conjunction with the statements made by the Hon. W. Mercier in the Assembly recently, when he announced it as essential that newsprint prices be sufficient to give adequate returns to producers, the inference in legislative circles is that if newsprint companies will cease warring among themselves, the act may not be put into effect.

The "teeth" in the measure is the power given the Government to make sharp increases in the stumpage dues for the cutting of pulpwood. There is a change in the basis of computation, something which has often been urged, since newsprint is sold by weight, and the board foot measurement, applicable to lumbering other than pulpwood, is considered to be out of date as regards pulpwood.

Rates at present run from $2.70 per thousand board feet downward. The Government is now to have the authority to charge stumpage by the cord, the rate to be $6 per cord of 128 cubic feet or at the rate of $12 per 1,000 board feet, this being the maximum. Of course, the Government may make reductions, as has been the case of late years.

There are included in the bill other provisions providing for better wages and conditions of workmen.

The main point of the bill, however, would appear to be as regards stumpage, for after fixing a price of $6 per cord of 128 cubic feet, outside measure, it is added:

"The Lieutenant-Governor-in-Council may, however, reduce such dues for any holder of a cutting license, if it be established to his satisfaction that the latter has observed the regulations under this Act and the provisions of the other Acts and regulations which govern him, and, in the case of such holder of a cutting license operating a paper mill or a pulp mill, or a pulp and paper mill, if it be also established that he has not disposed of the said products at a price which does not permit of a reasonable profit on their manufacture."

Consequently, it will be the Government which will fix the newsprint price, and not organizations of newsprint producers. The latter system it has been repeatedly stated in the House and elsewhere, has proven ineffective, even to the extent that Sir Herbert Holt testified before the banking and finance committee of the House of Commons last year that Government intervention was necessary.

Control Over Farmers' Pulpwood

The control which the Government will exercise goes further than the wood cut on Crown lands. The failure of the Government hitherto to force newsprint prices upward by the threat of higher stumpage dues on wood cut on Crown lands has been that the companies would buy their wood from farmers and settlers, and cut very little wood on their forestry concessions from the Crown.

The Government meets this counter-threat in clause two, which reads:

"Every person or corporation carrying on or causing to be carried on forest operations on land forming part of the public domain, or operating a mill for the making of paper or of pulp, or both, completely or partially supplied by wood cut on the same land, must observe the regulations which may be enacted under Section 3, in addition to the obligation of carrying out the provisions of any other Acts and regulations."

The words "completely or partially" contain the crux of the matter.

Section 3 reads:

The Lieutenant-Governor-in-Council, may, from time to time, adopt, amend or repeal regulations respecting the judicious development of the forest resources of the province, the control of timber cutting on land forming part of the public domain, the purchase and sale of such wood and its transformation into paper or pulp and, without restricting the generality of the foregoing terms, the object of such regulations may be:

1—To provide for the deposit, with the Minister of Lands and Forests, according to the formalities determined, of copies of contracts, covenants or agreements and of their amendments, relating to the acquisition of wood cut on land forming part of the public domain to its sale and transformation into paper or pulp, and to the disposal of such products, by sale or otherwise:

2—To limit the cutting of timber to the quantities necessary to fill the obligations really contracted, and also so as not to affect the future yield from the forest;

3—To protect the forester and mill workman both as regards health and working conditions;

4—To ascertain the quantity of wood cut on land forming part of the public domain and not utilized in the course of any year, to fulfil the obligations justly contracted by those who ordered the cutting thereof.

The regulations adopted in virtue of this section shall be published in the Quebec Official Gazette, and shall come into force on the date which the Lieutenant-Governor-in-Council may determine.

A Bureau for Inter-provincial Co-operation

In regard to the means whereby the Government may co-operate through the bureau, to be created, with the other provinces, the provision of the Act is that there may be created a bureau under such name as may be designated, and consisting of such number of persons as may be determined, charged with:

1—Collaborating with any similar body of another province, for the purpose of establishing uniform regulations for the paper and pulp industry;

2—Assuring the collaboration of any person or corpo-

(Continued on page 28)

More Hydrafiner News—

On Top Liner–folding box board–

actual facts. I don't know if we can give you any actual facts, but will be glad to tell you our experience.

The two Hydrafiners we have are both operating on top liner for folding box board. The one at Mill 1 is running in tandem with the Jordan, stock first going through the Jordan and then through the Hydrafiner. At Mill 2 the Hydrafiner is working in connection with one of your 2,250 pound Dilts Beaters. The Hydrafiner is placed in the basement under the Beater and the intake is connected with the bottom of the Beater, with discharge in front of the Beater, similar to the installation shown in your Hydrafiner Catalog.

We are not sure just what system is the best; however through tests made by our Laboratories we do find that the Hydrafiner increases the degree of hydration much more than our Jordans and does not destroy the length of the fibres. This, of course, is very essential on folding box boards, as it assists in closing up the sheet without reducing the length of the fibre, which gives us maximum folding qualities.

Our Machine Tenders in both Mills are very much in favor of the Hydrafiner due to results they obtained on the machine as to speed and formation. This is the reason we are ordering three more of these Hydrafiners, as we intend to have on each one of our machines one of your Hydrafiners and will be operated in connection with preparing stock for the top liner.

On No. 1 Kraft Bag Paper–

have them sent to you also.

In connection with the hydration with these refiners; I cannot give you any definite figures as th e way these were hooked up we could not obtain stock before and after passing through the Dilts. However, under actual operation we feel that each Dilts increased our production by 10 tons daily. I am referring to production of #1 Kraft. In other words this figures out about as it should at 20 HP per ton for hydrating.

– Dilts –

MACHINE WORKS Inc. FULTON, N.Y.

"Your Paper Is Made in Your Beaters"

"—But, is it Hydrafined?"

Boston Paper Market Conditions Fairly Good

Manufacturers of Paper Reported Generally Optimistic—Orders for Both Fine and Coarse Papers Numerous—Local Dealers Complain of More Chiselling Than Before Code Went Into Effect—Box Board Business Rather Spotty

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 15, 1935—A composite picture of the paper industry in Boston and vicinity shows conditions fairly good during the week under review. An exceptionally good feeling is reported as existing among the mills. While statements from dealers here averaged moderately favorable, it is said that there is more "chiselling" than before the Code went into effect. In some quarter, at least, orders came in freely for both fine and kraft papers.

The rainy weather continuing practically throughout the week affected the volume of trade in the local stores, and was likewise reflected in the smaller amount of orders for wrapping paper. The coming week, just before Easter, is expected to show more activity on the part of shoppers, so that business will be better.

The first three months of the year were "pretty good" in the fancy paper division of the industry. One house reported March as the best month for a long time, with prospects for April appearing favorable. The box board market was somewhat spotty, one firm reporting it as "jittery," although a fair volume of business was transacted.

Paper stock was quiet in most grades. Under old papers, mixed papers and old newspapers moved in small amounts at the same quotations as the previous week. Bagging remained firm. In new domestic rags, two grades advanced in price, with more activity. Blue overalls rose to .04 from .03¾ and khaki cuttings to .03½ @ .03¾ from .03¼ @ .03½. The demand for roofing rags continued to some extent, although it was possibly less than the previous week. The No. 2 grade declined to .90 @ .92 from .92½ @ 1.00, and the No. 3 grade to .72½ @ .80 from .72½ @ .90.

News of the Trade

The Tileston & Hollingsworth Company has issued a broadside describing Crinoline Super Plate, a superior super calendered book paper, which is easy to print on, folds well, and can be printed rapidly, requiring little make-ready. This paper is made in white and India. The broadside is printed on Crinoline Super Plate 25x38—80.

A two-alarm fire in the building occupied by P. H. Graham & Sons Company, dealers in paper stock, destroyed waste paper to the value of $2,000, according to estimate, on April 7. The fire was caused by spontaneous combustion on the first floor and was working into the second floor when discovered.

John Carter & Co., Inc., has started distribution of the new 1935 book containing the price list and stock lists of Eagle A Announcements and Advertising Papers.

A McLaurin-Jones Company (Brookfield, Mass.) meeting in relation to gummed paper was held recently at the office of Storrs & Bement Company. H. M. Donahue and Mr. Clark represented the McLaurin-Jones Company. Mr. Donahue discussed gummed papers made by his company, introducing a new sample book. President William N. Stetson, Jr., of Storrs & Bement Company, presided. After the meeting the McLaurin-Jones Company gave a luncheon at the Chamber of Commerce.

An announcement of the personnel of the Regional Labor Board for the First District, New England, includes, among those representing industry, the names of Henry S. Dennison, president, Dennison Manufacturing Company, Framingham, Mass.; and James J. Shea, superintendent, United States Envelope Company, Springfield, Mass.

W. G. Shortess, president of the Federal Paper Board Company, Inc., Bogota, N. J., and Ellsworth Cowles, of the New Haven Pulp and Board Company, called on the trade.

The International Paper Company of New York has been giving a daily prize of a Come-Pakt Garden, and Bird & Son of East Walpole, Mass., that of a linoleum rug at the Better Housing Exposition of the *Boston Herald*, extending over a ten-day period.

May Reopen Cole Paper Mill

Prospects for reopening the Cole Paper mill in Putney, Vt., are bright, so bright in fact, according to the *Journal* of Manchester, Vt., that while an actual transfer of the property has not been made negotiations for its purchase by Michael B. Gormley of Philadelphia, Pa., have progressed so far that the property is being made ready for operating, within a week or so.

Mr. Gormley is an experienced paper maker, having been in the business 18 years—in New York, Canada, the south and for the past seven years in Philadelphia. On inquiry Mr. Gormley told *The Brattleboro Reformer* he was getting the machinery and equipment cleaned up and repaired where necessary and was hoping to start work in a week with about 15 employes.

He stated that he had a contract for the next five years for all the paper, high grade tissue, he could manufacture with the machine now in the mill and all he could make with another machine. There is room in the mill, he said, for another machine but whether another will be installed has not been decided. The present output will be about 20 tons a week.

Union Bag Seeks To Issue Stock

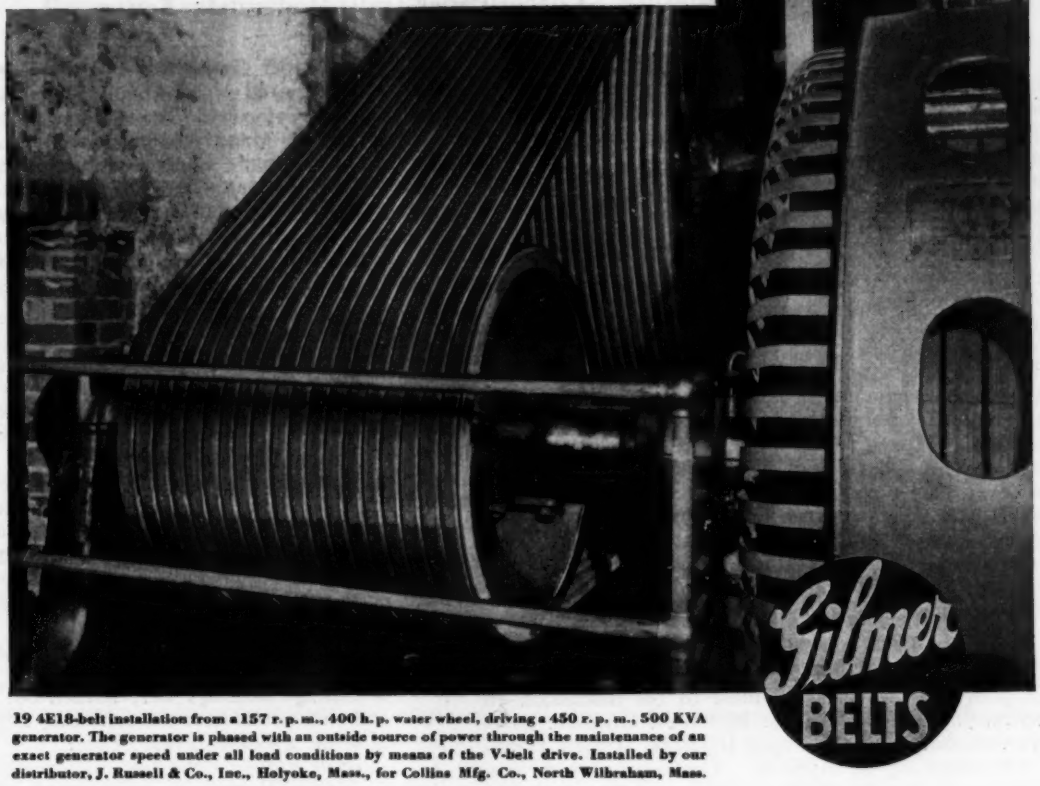
WASHINGTON, D. C., April 17, 1935—The Union Bag and Paper Corporation, New York City has filed a statement with the Federal Securities and Exchange Commission seeking to issue 52,427 shares of no par capital stock. 48,692 shares of this issue that are authorized but unissued are to be offered at $30 a share, and the 3,735 shares heretofore issued and now held in the treasury are to be offered at $39 a share. Alexander Calder, of New York is president.

Monarch Mill Damaged by Fire

KALAMAZOO, Mich., April 15, 1935—The Monarch Division of the Allied Paper Mills was damaged by fire on April 8 which started on the third floor. Through the efforts of the Millwood Fire Department, the fire was confined to one room. Thirteen sprinkler heads of the mill's fire system were broken.

GILMER V-BELTS

increase the efficiency of Paper Mill Drives



19 4E18-belt installation from a 157 r. p. m., 400 h. p. water wheel, driving a 450 r. p. m., 500 KVA generator. The generator is phased with an outside source of power through the maintenance of an exact generator speed under all load conditions by means of the V-belt drive. Installed by our distributor, J. Russell & Co., Inc., Holyoke, Mass., for Collins Mfg. Co., North Wilbraham, Mass.

MANY paper mills have found that they can depend on maintaining steady drives with Gilmer V-Belts . . . that paper production is greatly increased.

Constructed of *three* compositions of tough, flexible, heat-resisting compounds . . . and made in *matched* lengths . . . Gilmer V-Belts pick up loads *gradually* as they seat themselves in the V-grooves. Once under way, they *grip* the side-walls of the pulley . . . and transmit an even flow of dependable, maximum power.

By smoothing out variations in the load, Gilmer V-Belts reduce spoilage costs and, at the same time, protect both the machine and the motor that drives it.

We suggest that you let Gilmer V-Belts help you obtain greater plant efficiency . . . cut overhead costs . . . perhaps increase your profits. Gilmer V-Belts operate at highest efficiency on Fourdrinier Paper Machine Drives, Beater Drives, Jordan Drives and Triplex or Centrifugal Pump Drives. Gilmer V-Belts are sold in standard stock and special sizes to fit any make or size of drive.

L. H. GILMER COMPANY, Tacony, Philadelphia

Manufacturers OF COMPLETE LINE OF POWER BELTING

V-belts · Kable Kord Roll and Endless Flat Belting · Planer Belts · Speedage Endless Fabric Belts · Cone Belts · Roving Frame Belts · Moulded Rubber Belts · Winder Belts · Spinner Belts · Refrigerator and Washing Machine Belts · Conveyor Belts · Round Roll and Endless Fabric Belting · Endless Belting · Endless Cotton Belts · Laundry Feed Ribbons

SPECIALISTS IN QUALITY BELTS SINCE 1903

Chicago Paper Market Continues Fairly Steady

Although Movement Into Consumption Has Been Retarded by Inclement Weather Conditions, Outlook for Future Is Considered Promising—Demand for Various Grades of Fine Paper Well Sustained—Coarse Paper Only Moderately Active

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 15, 1935—The Spring season, with demand for Easter used products, is being held back locally by very inclement weather. With Easter only a short distance away retailers are finding it hard to move Spring merchandise in the face of cold, rainy weather and the paper supply firms are finding this out. Broadly speaking, however, the Chicago market continues to give a fairly good account of itself. Sulphites continue to be the ring leaders in reports of improvement, while the entire fine paper line is said to be moving along in encouraging fashion. Books and covers made some slight gains as demand broadened out. Market conditions continued satisfactory. Krafts, from the local jobbing standpoint, felt the weather effects as described above, although manufacturers' representatives reported a "pretty fair condition." Waxed papers were in better volume. Paper board also showed signs of increased strength. Groundwood was unchanged with this market not showing the briskness of the fine paper lines. Newsprint conditions were reported as contributing to this comparatively slow development. The better grades of waste paper were in fair demand locally but the lower grades, including mixed and folded news, were said to be "decidedly slow."

Paper Salesmen's Activities

The many association meetings held in Chicago last week provided the basis for most of the discussion entered into by members of the Mid-West Division, Salesmen's Association of the Paper Industry, at their Hamilton Club meeting on April 8. The sessions last week covering groundwoods, krafts, sulphites and other grades provided the fuel for much comment and the salesmen, in their desire to be fully informed, consolidated a lot of important opinions as to progress made. Meanwhile the association heard from Ben Babbitt, of the Brown Company, chairman of the golf committee, as to the details of the summer golf program. The only event for which a course has not been found is the initial outing in May. Otherwise the association, through Mr. Babbitt, has lined up a lot of high class golf to shoot at. The June event will go to the Skokie Country Club and the July outing to Bob O'Link. In August the exclusive Knollwood course will be used, while the final outing will probably be held at Olympia Fields where the salesmen will act as hosts to the annual outing held in conjunction with the fall meetings of the National Paper Trade Association.

The Link-Belt Company of Chicago, important suppliers to the paper manufacturing industry, has recently released an attractive 20-page catalog which completely covers the newly developed line of motorized speed reducers. The comprehensive folder shows, by means of actual example, how proper reducers may be selected from the tables listed. Copies of the catalog may be secured direct from the Link-Belt offices in Chicago.

During the past ten days at least four Illinois companies have announced the acquisition of new lines. The Capital City Paper Company of Springfield has added Modern Form and Mimeo from the mills of Consolidated Water Power and Paper Company, while the Moser Paper Company has acquired Valid Onion Skin made by the Fox River Paper Company. Transcript Bond, from the mills of the Eastern Manufacturing Company, finds an outlet through the LaSalle Paper Company, while the Strathmore Paper Company lines of Saxon D. E. Cover-Bannockburn are being handled by the Chicago Paper Company.

Early History of Bradner, Smith & Co.

"Makers of Chicago," the interesting column in "Commerce," published by the Chicago Association of Commerce, includes in its April issue, an interesting bit of history about Bradner, Smith & Co. The section in Commerce is designed to present "Institutions which are rooted deeply into Chicago and which have helped influence its growth and development." Here is the story—which should interest the entire industry.

"The wholesale paper business of Bradner, Smith & Co. was established in a one room store house at 12 South LaSalle street in 1852 and at the same time the company was engaged in the manufacture of paper. It was the first to establish a wood pulp mill in the West, which was only four years after the first wood pulp was made in America. For many years the company owned paper mills at Rockton, Ill., Kaukauna, Wis., Marinette, Wis., Menominee, Mich., and Monticello, Ind.

"The Chicago holdings were burned out in the Fire of 1871 and two weeks later the following advertisement appearing in the *Chicago Weekly Post:*

"Wholesale Paper: Have two mills working and a large stock of Manila, Wrapping, Print and all other papers and goods in Their Line Constantly Arriving. Orders filled as usual. Office—619 State street

"The business was in one location on Monroe street, between Clark and Dearborn streets from 1874 to 1902 and another location on the same street between LaSalle and Wells from 1902 until 1923 when it was moved to its new building adjoining its warehouses on South Desplaines and Van Buren streets."

News of the Trade

The Swigart Paper Company has just issued a complete booklet describing Hammermill Bond in full detail. Included is an effective series of listed advantages of Hammermill bond envelopes, together with actual samples of blue, bond finish; white, ripple finish and buff, bond finish. Another part of the mailing describes Hammermill bond, lists the stock colors, sizes and weights, finishes and suggested uses. A swatch section of six grades of white and thirteen colors, along with the white, linen, is also included. A separate enclosure gives the price list on both bond and envelopes. It is an attractive way of telling a complete story.

Gets Patent on Paper Making Machine

George J. Forman, of the Inland Paper Board Company, Versailles, Conn., has just been granted a patent on an improved paper making machine. The patent number is 1,995,802.

Demand for Paper Less Active In Toronto, Ont.

Manufacturers and Distributors, However, Report Increase In Volume of Business for the First Quarter Over the Corresponding Period In 1934—Warehouse Stocks Run Low and Will Require Replenishment—Sales of Rags and Paper Stock Gain

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 15, 1935—Business in the paper line during the present month has not been as brisk as desired and there has been some easing off in the demand. In some ranges there has been a slight improvement but, with the advent of settled weather and passing of the interruption in buying occasioned by the Easter holiday season, a good month is looked for in May. On the whole jobbers and manufacturers state there has been an increase in volume over the corresponding quarter in 1934. The printing trade is picking up considerably and this is a good omen. Stocks have run low and will now require replenishment. Collections are fair and on the whole the tone of business is more confident.

In the rag and paper stock arena sales for March ran about fifteen per cent ahead of March last year. There is a good demand for all high grades which are moving freely, with very little stock on hand. The call for low grades is not so good. There are large inventories but these are gradually coming down.

Robert Gair Co. Acquires More Plants

London Shipping Containers, London, Ont., and Canadian Containers, Windsor, Ont., have been acquired by the Robert Gair Company, New York. E. Victor Donaldson, who is head of the American and Canadian interests of the Robert Gair Company, is a former Toronto resident who for several years has been prominent in the paper board industry. The Gair organization some time ago purchased Concord Shipping Cartons, of Toronto, and the Corrugating and Container Company, Ltd, of Hamilton, and also has board mills in Toronto, Frankford and Campbellford, Ont., and Montreal, Que. The plants at London and Windsor are given over to the fabrication of corrugated shipping cases and containers and will continue to be operated by their present management. The Robert Gair Company also have a substantial interest in Firstbrook Boxes, Ltd., of Toronto, of which Mr. Donaldson was president and general manager for some years. Previous to that he was head of the Rudd Paper Box Company and Canada Cartons, Ltd., Toronto.

Pine Falls Mill to Reopen

It is good news to the people of Manitoba that the newsprint mill of the Manitoba Paper Company, at Pine Falls, which has been closed for a long period, will reopen in October next. Only one of the two machines will be put in operation and employment will be given to about 130 men. The announcement as to the reopening of the plant was made in the provincial legislature when the Hon. J. S. McDiarmid, Minister of Lands and Mines, moved the second reading of a bill respecting the taxation of lands in unorganized territory lands on which wood for paper making purposes is cut.

News of the Trade

The Hammermill Paper Company, Erie, Pa., has contracted to buy five thousand cords of poplar pulpwood from the farmers and jobbers in the Thunder Bay district of Ontario. This is the first time that the Hammermill company has made extensive purchases of this class of wood, its operations over many years at Port Arthur being confined largely to spruce. The poplar wood will be peeled and shipped to Erie.

Manufacturers and wholesalers of paper in Ontario are much interested in a motion which was adopted in the Quebec legislature during the past week to the effect that the Quebec government take the necessary steps to approach the railway companies and the Railway Commission of Canada in order to secure a reduction in freight rates on pulpwood either for transportation outside of the province or for transportation between different points in the province. In introducing the motion, Pierre Gagnon, M. L. A. for Kamouraska, stated that the present freight rates were so high that immediately they accounted for over half the sale price. He contended that lower charges by the railways, instead of encouraging the menacing competition from trucking concerns would eliminate the latter while bringing in much needed additional business to the railways.

Speaking on "Pulp and Paper" before the Ottawa branch of the Engineering Institute of Canada, W. S. Kidd said that the future of the technically trained man in the paper industry is bright for he alone is equipped to solve the many problems still to be found in every department. Mr. Kidd added that men with training in the various departments of engineering, particularly mechanical, electrical, civil, chemical and forestry, deserve much of the credit for making Canada the largest newsprint producing country in the world. Following the luncheon those present made an inspection of the plant of the E. B. Eddy Company, Ltd., Hull. Each guest was given a sheet of hand-made paper made by the Eddy Company laboratory staff.

Frederick C. Noad, deputy minister of forestry for Ontario during the past few months has resigned. It is said that a general shake-up in the department of Lands and Forests for Ontario is contemplated. E. J. Zavitz is likely to be reappointed as deputy minister of forestry and Walter C. Cain, deputy minister of lands and forests, will have his former jurisdiction restored to him.

It is understood that the Corrugated Paper Box Company, Ltd., Leaside, Ont., will restore the payment of preferred dividends on June 1 next owing to improved business.

The members of the Ontario and Quebec division of the Canadian Weekly Newspaper Association, who met in Toronto, paid a visit to the Copeland-Chatterton Co. plant and the Charters Publishing Co. in Brampton where they were entertained.

Merrimac Paper Co. Incorporates

[FROM OUR REGULAR CORRESPONDENT]

LAWRENCE, Mass., April 15, 1935—The Merrimac Paper Company has been incorporated with a capital stock of $100,000; 1000 shares, $100 each, and 1,000 common shares of no par value. Donald J. Hurley is president; L. Cushing Goodhue, vice-president, and Leonard Wheeler, Jr., 84 State street, Boston, treasurer.

Northern Paper Mills Re-Elect Officers

W. P. Wagner Again to Serve as President and Treasurer—Judson G. Rosebush, Vice-President and General Manager, Considers Outlook for Current Year Encouraging—Business In 1934 Showed Marked Improvement Over Preceding Year

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 15, 1935—Marked improvement in business for the year 1934 as compared with the previous year was reported to stockholders of the Northern Paper Mills, Green Bay, Wis., and subsidiaries at the annual meeting April 6. The outlook for the present year is encouraging, according to Judson G. Rosebush, general manager, although he declares it will not be a "push-over."

Reports of the associated companies presented at the meeting included the following: Northern Electric Company, Green Bay, Wis.; Tuttle Press Company, Appleton, Wis.; Patten Timber Company, Amasa, Mich.; Northern Paper Mills, Ltd., Cappel, Ont.; and Paper Service Company, Chicago, Ill.

All of the directors were re-elected, and they in turn re-elected the officers as follows: W. P. Wagner, president and treasurer; Judson G. Rosebush, vice president and general manager; L. G. Wood, vice president and assistant general manager; Earle Murray, vice president; G. E. Buchanan, secretary; A. K. McNaughton, assistant secretary; E. A. Lindberg, assistant treasurer. Additional directors are: C. A. Goodman, Marinette, Wis.; F. J. Harwood, R. H. Purdy, A. F. Tuttle, H. W. Tuttrup and A. B. Weissenborn, all of Appleton, Wis.

Industrial Safety Awards

Bergstrom Paper Company, of Neenah, Wis.; and Wisconsin Tissue Mills, Central Paper Company and Whitmore Machine and Foundry Company, of Menasha, Wis., were presented with handsome plaques by the Employers' Mutual Liability Insurance Company of Wausau, Wis. There were given in a contest among 1,200 concerns for the most notable no-accident records for a six-month period from July to December, 1934. They were outstanding for their records in industrial safety.

C. R. Meyer & Sons Company, Oshkosh, Wis., builders of most of the paper mill structures in the Fox River Valley, was given second place in a national accident prevention contest of the Associated General Contractors of America. The company employed its workmen for 214,920 man hours during the year ending September 30, 1934 with a severity rate of only 0.535. The severity rate is the number of days lost per 1,000 hours of work. In addition to its work in the Fox River Valley, the company did construction at Park Falls and Rhinelander, Wis., and Escanaba, Mich. during the contest period. This was the first time the Meyer company had entered the contest.

News of the Industry

Modernization of machine No. 8 of the Thilmany Pulp and Paper Company, Kaukauna, Wis., is in progress. Thirty-five workmen, mostly members of the crew of the machine, are completely overhauling the equipment, installing new parts and adding modern productive attachments. About two weeks will be required for the work.

Installation of new equipment made it necessary for Badger Paper Mills, Inc., Peshtigo, Wis., to suspend operations for several days. A new chip screen was added in the pulp mill, and a new stock chest, stock pump and grinders were installed in the paper mill. This is the first time in a long period the company has found it possible to shut down for repairs and improvements.

Dr. John Fanselow, director of research for the Kimberly-Clark Corporation, Neenah, Wis., was the speaker at a dinner meeting of the Engineer's club of the company at Appleton, Wis. last week. He talked on the relation of research problems to engineering.

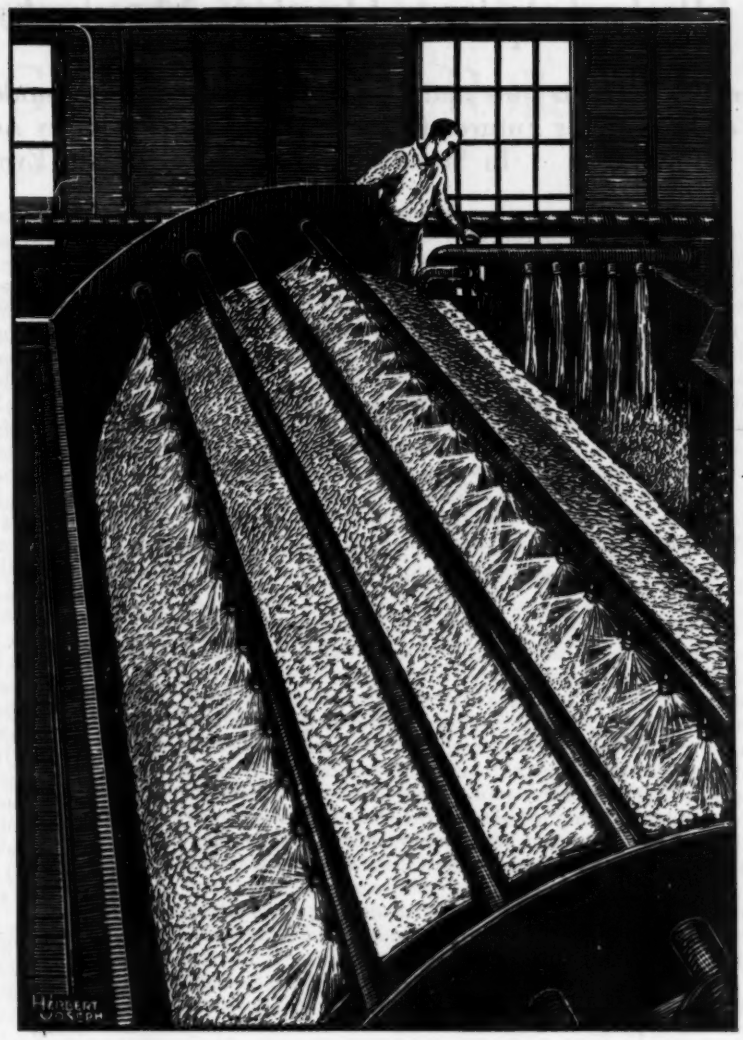
Wisconsin research experts will provide most of the program for the cellulose and colloid chemistry sections of the convention of the American Chemical Society in New York City April 22 to 26. Prof. H. F. Lewis, of the Institute of Paper Chemistry, Appleton, Wis., is chairman of the cellulose division, and Alfred J. Stamm, of the United States Forest Products Laboratory, Madison, Wis., of the colloid section. Speakers on cellulose will include George J. Ritter, J. H. Barbour and Elwin E. Harris, of the Forest Products Laboratory, and Olga Smith, of the Institute of Paper Chemistry. L. A. Hanson, of the laboratory, will speak on colloid developments.

New Sutherland Unit Starts Production

KALAMAZOO, Mich., April 15, 1935—The Sutherland Can Company, latest unit of the Sutherland Paper Company, has started production, although only half the equipment is set up. The balance is enroute from Milwaukee, Wis., and it will be installed and started up within a few weeks following its arrival.

The equipment includes the complete plant of the Wisconsin Can Company, a former subsidiary of the Cudahy Packing Company, which was purchased by the Sutherland Company late last year. The New Unit will employ approximately 100 men. John Annen of Milwaukee, Wis., is the superintendent of the new division. He has moved to Kalamazoo with his family from the Wisconsin city. The unit is occupying the plant which was formerly owned by the American Signs Corporation and recently purchased by the Sutherland Company.

The new addition to the Sutherland plant is practically completed. The contractor was the O. F. Miller Company. The new building adjoins the south side of the Carton plant. The building will be used mainly as a warehouse and storage. Building dimensions are 226 x 112, with a loading dock 38 x 110, which can be entirely closed in inclement weather by curtain doors. A portion of the second floor will be used for manufacture of some of the specialties for which the company is famous. The building is full two stories but half of the lower floor is below the ground level. First floor ceiling is of flat slab construction which eliminates all overhead beams. Mushroom type pillars are used on which steel reinforcing embedded in the concrete is footed. Second floor is topped with a high monitor the sides of which are of almost solid glass. Ample window space gives a maximum of light. Roof supports are steel beams, rather than truss work in order to give clear overhead for the greatest possible storage. Walls are of brick—steel window frames and all construction throughout is fireproof. Roof is of the build-up type. Access to the Carton plant is by large doorways on both floors. Their volume of business is considerably more than it was last year.



● One of a series of washers which purify the cellulose fibers in the mill of the Weyerhaeuser Timber Company, Pulp Division.

Pulp

IS ONLY AS PURE AS THE WATER WHICH WASHES IT

To make a pure, stable pulp, the cellulose fibers must be washed free of all processing chemicals. Pulp is only as pure as the water which washes it. Millions of gallons of pure, neutral water are used daily in washing Weyerhaeuser pulp. The great volume of water thru efficient washing equipment in the manufacture of Weyerhaeuser Bleached Sulphite, endows the product with the characteristics of purity and neutrality.

WEYERHAEUSER STANDARD

PULP DIVISION

WEYERHAEUSER TIMBER COMPANY

LONGVIEW, WASHINGTON

Philadelphia Paper Market Marking Time

Members of Both Fine and Coarse Paper Divisions Assume Strictly Waiting Attitude—Uncertainty Over Future of National Industrial Recovery Act Considered Important Factor In Situation—Miscellaneous Trade Events

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 15, 1935—Reports from those in the paper trade here indicate that both fine and coarse divisions are assuming a strictly waiting attitude. What is really at stake is the business volume of spring and summer and the prospects are none too assuring. There is no particular reason to expect a slump but the whirl of uncertainties will certainly tend to limit business improvement to the spring impetus unless something happens to clear the atmosphere. The uncertainty over the NRA is an important factor. It is obvious that orders are being held in abeyance on the chances that the NRA may come to an end in June. All in all, the consensus of opinion of those in the trade here is that they are inclined to believe the NRA will not be allowed to expire in June.

Association Activities

A bulletin was recently mailed out from the headquarters of the Philadelphia Paper Trade Association to all the members in the trade, notifying them that a continued suspension on filed prices under an open price plan on the following kinds and grades of paper in this area has been permitted on order of the chairman of the Regional Committee for a further period of sixty days from and after April 5, 1935—kraft paper, gummed sealing tape, plain and printed; tissue paper, grocery bags and poultry sacks.

The regular monthly meeting of the Board of Governors which was scheduled for Wednesday, April 10, has been postponed owing to the absence of two of the members who are in New York.

On Tuesday of this week a special meeting of the fine paper division was held. Ormond Freille, chairman, presided.

A meeting of the Wrapping Paper Division, with George W. Ward, chairman, presiding, will be held on Thursday of this week, at 12:30 o'clock.

The regularly scheduled meeting of the Philadelphia Paper and Cordage Association, Inc., has been postponed from its regular meeting date on account of it falling on Good Friday. President Platt stated that it has been decided to hold the meeting on April 26 at the Hotel Adelphia, at which time there will be round table discussions of various subjects pertaining to the association, and it is hoped that plans will be perfected for the annual outing in June.

Gilbert Paper Campaign Launched

Announcement has been made by the Whiting-Patterson Company of their appointment as exclusive distributors in the Metropolitan area for all the Gilbert papers, manufactured by Gilbert Paper Company at Menasha, Wis., which include Dreadnaught Parchment, super 100 per cent rag; Lancaster Bond, 100 per cent rag; Valiant Bond, 75 per cent rag; Radiance Bond, 65 per cent rag; Resource Bond, 50 per cent rag; Dispatch Bond, 25 per cent rag, and Cardinal Bond, 100 per cent super sulphite. Frank J. Sneller, sales manager for the Gilbert Paper Company, recently addressed the salesmen of Whiting-Patterson, depicting the background of the Gilbert paper mill from a historical standpoint. The Gilbert Paper Company has pioneered in rag content papers and was the first mill in this country to use the Barber air-drying system.

In connection with the above announcement, it was learned that the Whiting-Patterson Company has launched a campaign to round up profitable business on the above papers. The campaign is to extend over seven weeks, ending May 11, 1935. It is arranged so that each salesman has an equal opportunity to draw down awards. There are to be three weekly awards based on three classifications into which orders fall.

Under Class I, award will be made for the greatest number of orders for paper and envelopes on Gilbert Lines—Cardinal, Dispatch, Resource, Radiance, Valiant, Lancaster and Dreadnaught Bonds.

Under Class II, for the salesman whose dollar and cents total of orders on Gilbert Bond Papers—Cardinal, Dispatch, Resource, Radiance, Valiant, Lancaster and Dreadnaught shows the largest percentage of gross profit in proportion to total selling price, a weekly award will be made. Sales of envelopes will not be considered in computing gross profit in this classification.

Under Class III, to the salesman whose total dollar sales each week is the largest on Gilbert Bond Papers—Dispatch, Resource, Radiance, Valiant, Lancaster and Dreadnaught Parchment, a weekly award will be made. Sales of envelopes made from those papers will be included as part of total sales in this class. Orders received during week of special promotion of each line will count double for award under this classification. The counting of twice the value of sales will be used only for purposes of reckoning and used only in Classification III, viz., during Dispatch Bond week, orders on Dispatch Bond will count double, etc.

There are eight General Rules governing this campaign, among which are the following: Each week will be designated as a special week on a particular Grade and the grade to be especially promoted will be posted each Monday morning—and not announced in advance—and selection of line will follow no prearranged schedule. And only orders received up to close of business Saturday noon of each week will be used in arriving at weekly standings.

News of the Trade

Paper Merchants, Inc., are releasing for distribution a new book mill paper information section on book paper for their loose-leaf catalog.

Winfield Predmore, president and treasurer of Paper Manufacturers, Inc., sailed for Florida last week and while there will visit Miami and Palm Beach.

The many friends of Harry Lefkowitch, treasurer of Simon Walter, Inc., who recently underwent an operation at the Jefferson Hospital, will be glad to learn that he is convalescing at Atlantic City.

Charles Thorne of Monroe Paper Company, Lawrence, Mass., called on the trade here recently.

Gunnar Berglund Arrives

Gunnar Berglund, manager of the Svano Sulphite Mills and the Dynas Kraft Mills, has arrived in New York from Sweden. He is making his headquarters at the offices of J. Andersen & Co., 21 East 40th street, New York.

Handling of Bearings When Re-Covering and Re-Grinding Press Rolls

By Lloyd Hornbostel[1] and John Borland[2]

The successful operation of anti-friction bearings on any heavy duty, rotating shaft application is to a large extent dependent on the proper fitting of the inner races of the bearings on the shaft. This is particularly true in the case of paper machine press rolls. Here service is severe, long life is expected and shut-downs are costly. In using tapered roller bearings on such applications, the cones or inner races should be mounted on the roll journal with a press fit of .0005″ per inch of cone bore. The roll necks should be ground to size, as difficulties have been encountered with turned necks due to the tool marks pounding out and allowing the bearings to become loose.

In order to facilitate assembly of the bearings with the recommended press fits, the cones may be heated in oil to a temperature not exceeding 250 degrees F. and shrunk in place. This temperature should not be exceeded because of the possibility of drawing the temper from the hardened raceways and rolls.

A typical application of tapered roller bearings to a primary press roll is shown in Fig. 1. In making the assembly of these bearings, the inner closure is first placed on the neck. The inner cone and roller assembly is then heated in oil and placed in position squarely against the shoulder on the neck. It should be held in place while cooling to insure that it does not shrink away from the shoulder. The housing, with the cups or outer races already pressed into position, may then be applied. The outer cone assembly, having been heated, is then assembled and is pulled into place by means of the end plate and cap screws. The housing should be rotated by hand while pulling up on the end plate. The adjustment of the bearings should be such that they rotate with a very slight drag. As the bearings cool, the adjustment should be checked and if necessary, the end plate tightened further.

When the entire assembly is cold, the distance between the end plate and the end of the roll journal should be accurately measured with feelers and an amount of shims equal to this dimension inserted in order to hold the bearing set-up. The closure pieces may then be bolted in place.

In the design shown in Fig. 1, the end of the box is completely closed. Another type of mounting is shown in Fig. 2 in which the roll neck extends through the end cap to provide for driving. The procedure in assembling the bearings is essentially the same as that followed with the first design, the only difference being that instead of pulling the outer bearing into place by means of the cap screws and end plate, lock nuts are used for this purpose. After the bearings have been adjusted to a slight drag, the outer lock nut should be jammed against the inner nut and both locked with the tongued locking washer.

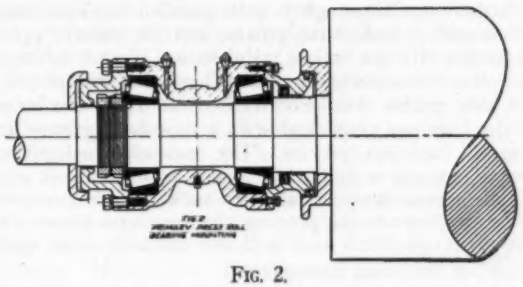


FIG. 2.
Primary press roll bearing mounting.

If the bearings are not properly press fitted on the neck, they will begin to creep in a very short time. This results in cutting the neck and increasing the looseness and creep. It also wears back the shoulder on the neck and the portion of the end plate that contacts the outer cone. This lateral wear allows the set-up of the bearings to change, thereby leading to a premature failure.

Obviously, if the bearings are properly fitted to the neck, it is undesirable to remove them at more or less frequent intervals for re-covering or re-grinding the roll. Tightly fitted bearings require considerable pressure for removal. Wearing down the neck so that it is no longer possible to reassemble the bearings with the proper press fit also results from repeated removals.

Recommended Practice for Re-covering Rolls

In order to determine the effect on the bearings when they are not removed when re-covering the roll, a test was conducted by The Timken Roller Bearing Company in conjunction with the Beloit Iron Works of Beloit, Wis., and the Stowe & Woodward Company of Newton Upper Falls, Mass. In making this test, a unit assembly consisting of the journal, bearings, housing and closures was fully packed with a high temperature soda base grease. The closure openings were wrapped with cotton tape. The assembly was then placed in a vulcanizing oven, which also contained a number of rolls that were being re-covered, and allowed to remain there during the regular vulcaniz-

[1] Beloit Iron Works, Beloit, Wis., [2] Timken Roller Bearing Co., Canton, Ohio.

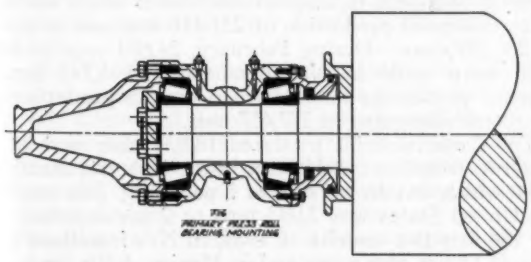


FIG. 1.
Primary press roll bearing mounting.

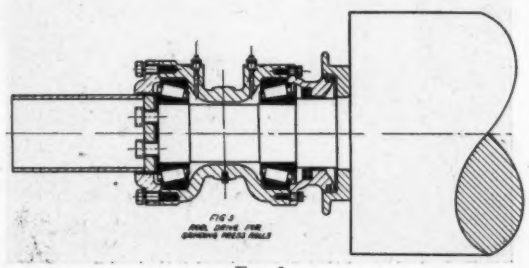


FIG. 3.
Roll drive for grinding press rolls.

ing process. The temperature of the oven during this time was maintained at 260 degrees F. for 19½ hours, with a 3½ hour period to raise it to this point. After the run the housing was removed, disassembled and carefully inspected. It was found that the grease had not broken down and was very little affected in consistency. The bearings themselves were not harmed in any way.

In view of the success of the above test, it is recommended that the bearings be left on the roll necks when the rolls are to be re-covered. However, the boxes should be flushed out thoroughly with gasoline or kerosene, repacked with a soda base grease, and the closure openings wrapped with tape before the rolls are placed in the oven. After the vulcanizing operation has been completed, the soda base grease should be flushed out from the housings and the bearings re-packed with a lime base grease before being put back into service. The reason for using the two types of greases is that while a soda base grease is adapted to high temperature conditions such as are encountered during the vulcanizing process, the lime base grease should be used in operation as it will not emulsify with water as readily as the soda base grease.

Recommended Practice for Re-grinding Rolls

It is further recommended that the bearings be left on the necks when it becomes necessary to re-grind the rolls. The same objections to removal of the bearings apply in this case as in the case of re-covering. Suitable stands can be very easily fitted to the grinder which will permit of supporting the roll through the bearing housings. If the journal is designed with an extension such as that shown in Fig. 2, the drive may be applied directly. However, if a closed end housing similar to the design in Fig. 1 is used, it is necessary to provide means for driving the roll. Such a device for driving the roll is shown in Fig. 3. It consists of an end plate which replaces the regular adjusting plate. A piece of pipe is welded to this plate and the drive is applied to this pipe by some suitable means. An annular groove closure piece is also used. In grinding the roll, the regular end cap and end plate are removed and the end plate with the pipe welded to it, and the new closure are installed. Care should be taken to see that the bearings are in proper adjustment and that the correct amount of shims are used. The roll is then placed in the grinder, being supported on stands carrying the bearing housings. Grinding may then proceed. In addition to eliminating the necessity for removing the bearings, such a procedure results in a more accurate job in that any runout in the bearings themselves will be compensated for by supporting the roll in the bearings while grinding.

FIG. 4

Fig. 4 illustrates such a method of grinding a roll. It will be noted that the roll is mounted in the grinder, being supported by brackets holding the bearing boxes. The attachment for driving has been applied, but the closure piece has not yet been put on. It is of course important that this be applied before any grinding is done to prevent dirt or foreign material from getting into the bearing box.

By following the procedures outlined above, the mill operator will save himself considerable trouble in that he will not have to remove bearings for re-grinding or re-covering press rolls. A much more satisfactory installation will also result in that if the bearings are originally applied with the proper press fit, the fit will not be destroyed by subsequent frequent removal of the bearings. The life of the bearings will also be considerably increased.

S & W High Speed Tuber

A new bag machine made by the Smith & Winchester Manufacturing Company, of South Windham, Conn., runs at speeds faster than ever before probably thought possible and holds side seam variations to less than one-sixteenth of an inch. Working directly with the engineers of one of this country's largest electric companies, Smith & Winchester have perfected an electric eye controlled mechanism as an accessory to this machine. This allows tubes to be turned out from poorly wound rolls with perfect assurance that side seams will never vary over one-sixteenth of an inch, plus or minus—and this at speeds as high as 600 feet per minute. Even on center seam tubes this register control is highly desirable because it holds the paste line at a constant distance from the edge of the sheet. The complete control unit is placed directly behind the tuber and takes the place of the regular paper roll stand. It consists of the electric eye controlled mechanism, paper roll and friction brake.

The new machine is completely described and illustrated in a folder entitled "S & W High Speed Tuber" which may be obtained gratis by writing to the company.

February Newsprint Statistics

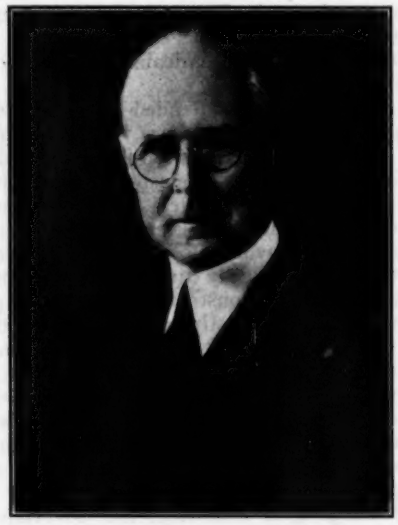
Production of newsprint in Canada during February 1935 amounted to 180,305 tons and shipments to 160,859 tons, according to the Newsprint Service Bureau. Production in the United States was 70,805 tons and shipments 69,478 tons, making a total United States and Canadian newsprint production of 251,110 tons and shipments of 230,337 tons. During February, 24,604 tons of newsprint were made in Newfoundland and 1,743 tons in Mexico, so that the total North American production for the month amounted to 277,457 tons.

The Canadian mills produced 18,934 tons more in the first two months of 1935 than in the first two months of 1934, which was an increase of 5 per cent. The output in the United States was 3,033 tons or 2 per cent less than for the first two months of 1934, in Newfoundland 5,101 tons or 11 per cent more, and in Mexico, 1,105 tons more, making a total increase of 22,107 tons, or 4 per cent.

F. J. Tone Awarded Electrochemical Medal

Frank J. Tone, president of The Carborundum Company of Niagara Falls, N. Y., has been awarded the Edward Goodrich Acheson Medal by the Electrochemical Society. This is the second distinguished award to come to Mr. Tone in recent years, he having been the first recipient of the Jacob F. Schoelkopf Medal presented by the Western New York Section of The American Chemical Society.

The Edward Goodrich Acheson medal was founded in August 1928 by the late Dr. Acheson, the inventor of "Carborundum" and long recognized as an outstanding figure in electrochemistry. The award is made every two years to "the person who shall have made a distinguished contribution to the advancement of any of the objects,



FRANK J. TONE

purposes, or activities of the Society," and is the highest honor which can be paid by the Electrochemical Society.

Three distinguished men have previously received the Acheson award; Dr. Acheson himself in 1929, for his discovery of the processes of manufacturing "Carborundum" and graphite; Dr. Edwin Fitch Northrup for his invention and development of the high frequency induction furnace in 1931; and in 1933, Dr. Colin G. Fink for a series of achievements in the field of electrochemistry processes for making ductile tungsten filaments and the electroplating of chromium.

The Acheson Award goes to Mr. Tone for his many and important contributions to the development and perfection of practical and commercial processes in the fields of electrochemistry, electrometallurgy and electrothermics, these contributions extending their benefits to the field of all useful arts.

Among Mr. Tone's many other achievements he originated the first commercial process for the production of silicon metal; discovered the electric furnace mullite and spinel, and has made important contributions to the commercial development of electric furnace abrasives and super-refractories, particularly silicon carbide, also silicon carbide resistor elements.

It is interesting to note that Dr. Acheson engaged the services of Mr. Tone in the early nineties and it was the latter who played a major part in carrying Dr. Acheson's invention of silicon carbide to a commercial success. A remarkable ability to recognize future possibilities was shown by Mr. Tone at his first meeting with Dr. Acheson, and the courage of his convictions was evidenced by his accepting this new position at only half the salary he was then receiving.

Mr. Tone holds the distinction of having discovered a method of producing a common element in such a manner that it might be utilized industrially, and he has also played the key part in building up from humble beginnings, two major industries (synthetic abrasives and refractories) which, although related, are widely divergent in their manufacturing practice and fields of application.

Early in the present century, Mr. Tone originated the method of producing the element silicon in unlimited quantities and at a price that permitted its industrial utilization, constituting an important contribution to the metallurgy of alloy steels. Heretofore this element had been a laboratory curiosity, despite the widespread occurrence of its compounds.

When Mr. Tone came to Niagara Falls in 1895, he became one of the pioneers in the development of electric furnaces on a large scale. He and his co-worker, Mr. F. A. J. Fitzgerald, were the first to apply a thousand horsepower to an electrothermic process, and were soon utilizing in this manner about half of the entire output of Niagara Falls power. Mr. Tone's work in the abrasive field began in the earliest days of the synthetic abrasive, and it may be said that his guidance has been an outstanding factor in revolutionizing the abrasive industry. Many of the present day theories of the high temperature reactions of silica are based directly on Mr. Tone's observations, made in those early days.

Paralleling his achievements with electric furnace products in the abrasive field, Mr. Tone is primarily responsible for the present development of the super-refractories industry. He foresaw that price was a secondary matter, compared with specialized refractory service, and he introduced a super-refractory brick at a dollar each, where others competed for business with bricks at five cents. His persistence in this field, in the face of the doubts of his associates and frequent unsuccessful trials, were the largest factors in building the refractories division of the Carborundum Company from its early stage of scientific speculation to its present proportions as one of the world's leading producers of refractory products. This refractory division utilizes thousands of tons of silicon carbide, trade named "Carborundum," in a single year.

Mr. Tone has had one hundred and forty-five patents granted to him over a period of 33 years and a number of others are still pending in the United States and foreign patent offices.

The formal presentation of the Acheson Award will be made at the Fall meeting of the Electrochemical Society at Washington, D. C., October 10.

P. H. Quilty Injured at Thomson

[FROM OUR REGULAR CORRESPONDENT]

THOMSON, N. Y., April 15, 1935—Patrick H. Quilty, night superintendent at the United Paperboard Company, is confined to the Saratoga Hospital following injuries resulting in a fractured arm when he fell from a machine at the plant. He was inspecting a large paper machine when the accident occurred and medical aid was summoned hastily. Later he was ordered to the hospital.

QUEBEC INTRODUCES NEWSPRINT PRICE CONTROL BILL

(Continued from page 14)

ration engaged in an industry mentioned in the preceding paragraph with a view to obtaining the most profitable development of the forest resources of the province, for all classes of the population and for the Government;

3—Receiving and taking cognizance of complaints respecting the fulfilment of contracts for the sale of products derived from wood cut on land forming part of the public domain, acting, with the consent of the interested parties, as arbitrator in such disputes, and suggesting such solutions as it may deem most just;

4—Fulfilling any commission or other duty which the Minister of Lands and Forests may deem expedient to entrust to it.

As to the reasons for the Act, which is termed the "Forest Resources Protection Act," Hon. Mr. Mercier lays them down in the preamble to his measure, as follows:

"Whereas, the forest resources of the province constitute one of its chief riches;

"Whereas, their development is an important source of revenue for the agricultural and working class of the population as well as for the Government;

Whereas, it is in the public interest to afford the necessary protection to the development of such forest resources, so as to assure the perpetuity thereof, and to render such development profitable;

"Whereas, a judicious development of such forest resources would furnish permanent and paying markets for the agricultural population;

"Whereas, it is necessary, moreover, to protect the workman, working in the forest or at the mill, as well with respect to wages, hygiene and working conditions."

Government Proposals Arouse Misgiving

In newsprint circles the proposed action by the Quebec Government has created what one paper describes as "considerable turmoil." It appears to be conceded that there are potential dangers in the measure, and there is some fear as to the likely action on the consumers. There are many who do not approve of what is considered government encroachment on the domain of business.

While admitting that the Government has every right as landlord and trustee of the Province's natural resources to protect its interests, both in the direction of proper return and in the matter of conservation of such resources, these commentators express the feeling that in going so far as dealing with the question of newsprint prices and contracts there develops a governmental invasion of a field which rightfully belongs only to producer and consumer. For the moment the newsprint interests are not making any public statement in the matter, but there is said to be a likelihood that their viewpoint will shortly be brought to the attention of the Government.

Views of Newspapers

The *Montreal Star*, in an editorial on the subject, finds that it is "at least encouraging" to note that the Quebec Government is ready to take action to help stabilize the newsprint industry. Dealing with the over-expansion of the industry between 1925 and 1931, when the total capacity was increased from 1,720,000 tons per annum to the present capacity of 3,800,000 tons, it says that although the demand has increased there still remains an excess of capacity over demand of 1,200,000 tons, and this is at the root of the evils that beset the industry. The practice for all the companies to sell at one price was all right, it says, before the period of "insane expansion" began, but now it was disastrous as the price today of $40 was fixed because of the extraordinary action of one company, which by its action had secured in actual new tonnage only 30,000 tons. Expressing doubt as to whether the other provinces would follow Quebec in fixing prices, it says: "If a single mill in another province were to undercut the price fixed jointly by Quebec and Ontario, the whole fabric might go tumbling down again and the price for all be that set by the rate-cutting company. It looks as if the only effective method of rehabilitating the newsprint industry would be by economic consolidation and control of excess production, with—as a last resort—price-fixing for the entire Dominion by agreement between all the Provinces."

The *Montreal Gazette*, in dealing editorially with the matter, says:

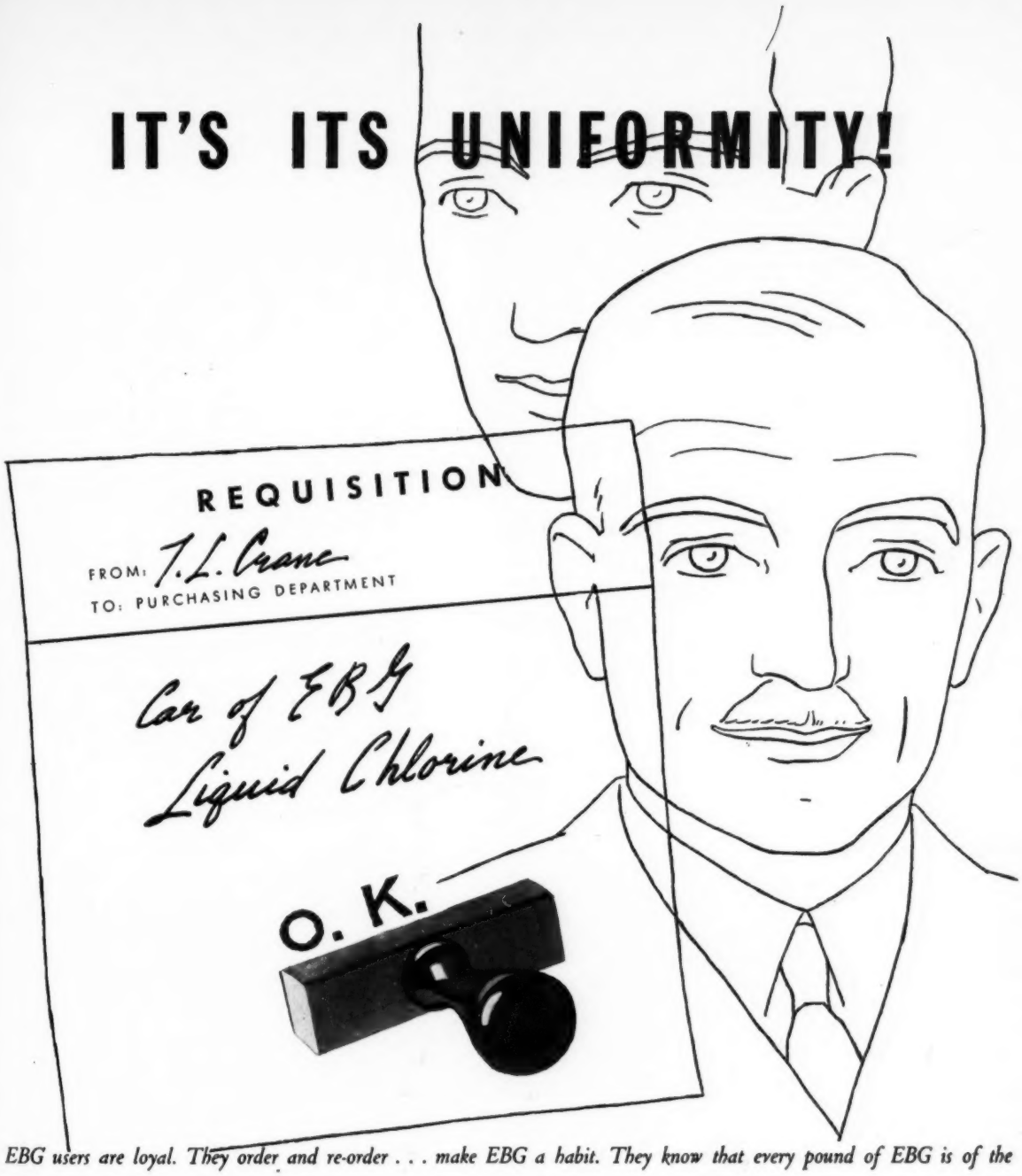
"It cannot be validly contended that the Government has been precipitate. Whilst there was an apparent possibility of industrial betterment being effected through closer co-operation amongst newsprint producers. Quebec was reluctant to proceed to legislative enactment. The principle of Government intervention in any industry is not one that can be favored; but in this instance the public interests are very directly involved. Conditions as they have evolved under the constraint of newsprint producers' organizations are manifestly prejudicial to the public good. In the circumstances, the Government in its latest initiative is therefore minding its own business, which is the public business. And its only desire is to prevent the present confused situation from becoming worse confounded and save the newsprint industry from the ruin which would seem to be inevitable, if actual conditions persist much longer.

"In the course it is following, the Government deliberately and judiciously leaves the way open for legitimate escape from the changes the pending legislation, when passed, will sanction, inasmuch as the act is to come into force only on such a date as it may please the Lieutenant-Governor-in-Council to fix by proclamation. This may be next month. It may be never. Should it ever be proclaimed, the maximum benefits possible will be felt if other provinces where the newsprint industry is carried on are willing to act in accord with Quebec. The fact that there is no assurance of anything like uniformity of action on the part of the provinces in this respect serves to stress how useful the adoption of Premier Taschereau's counsel would have been in the first instance. Obviously, the newsprint bill now before the Quebec Legislature would not have been necessary. However, the Prime Minister's advice still stands, and prompt affirmative action by the newsprint manufacturers on his recommendations would seem to be the best practical way to bring the newsprint industry out of ruinous chaos into some profitable order and stability."

Paper Industry and Forest Depletion

An estimate of the total forest production of Canada for 1933 has just been completed by the Forestry Branch of the Dominion Bureau of Statistics. It is calculated that this production involved the cutting of 2,027,713,767 cubic feet of standing timber. Putting the volume destroyed by fire at 230,000,000 cubic feet and that by insects and other causes at 700,000,000 cubic feet, the total annual drain on the country's forest resources in 1933

IT'S ITS UNIFORMITY!



• *EBG users are loyal. They order and re-order . . . make EBG a habit. They know that every pound of EBG is of the same high quality—whether it comes in cylinder, drum or tank car. They rely on EBG to give them consistency in results day after day, year in, year out. Why? Let them tell you . . . "It's its uniformity!"*

ELECTRO BLEACHING GAS COMPANY • MAIN OFFICE 9 EAST 41ST STREET, NEW YORK, N. Y. • PLANT· NIAGARA FALLS, N. Y.

EBG Liquid Chlorine

FIRST IN THE COUNTRY

was considerably more than 2,900,000,000 cubic feet. Canada's forest resources, according to the latest estimate, is placed at 266,844 million cubic feet of standing timber, capable of yielding 448,355 million feet board measure of sawn lumber and 1,521,938 thousand cords of pulpwood, ties, poles, etc.

The report states that an annual depletion of three billion cubic feet would not necessarily imply that the total resources are reduced by that amount every year and that the supply will therefore be exhausted in about 89 years. For one thing the rate of utilization is not constant. Furthermore with about 600,000 square miles of accessible timber in growing condition, an average annual increment of 10 to 11 cubic feet per acre would be quite possible under forest management and would cover the present annual average depletion.

As far as value is concerned, pulpwood is the most important forest product, with a total of over $33,000,000. The production of unmanufactured forest products as a whole provides the equivalent of a full year's work (300 working days) for at least 65,000 men, with an annual wage distribution of $46,800,000. The total value of these unmanufactured forest products in 1933 was $93,773,142, Quebec Province leading with $34,813,053, Ontario following with $23,298,854, and British Columbia being third with $17,994,204. The net value of production in the wood and paper group, or value added by manufacture, was $207,175,377, and the gross value $342,155,077.

Eighty-five per cent of the total cut of pulpwood was used in the pulp and paper industry in Canada. The value added by manufacture into pulp was over $47,000,000, and the value added by manufacture in the pulp and paper industry as a whole was over $75,000,000.

Kieffer Mills Increase Production

Ever since the depression year of 1932, the production of the various products of the Kieffer Paper Mills have been on a gradual increase, and production for the year 1934 has been a very successful one, and to such an extent that on January 1, 1935 they paid their employees a bonus for their efforts and loyal cooperation, which amounted to between two and three weeks salary for each employee who had been on the pay roll for one year or more. The Code regulations and wages have been strictly adhered to ever since the Recovery Act became effective. They also carry and pay the full premiums on $1000.00 to $1500.00 life insurance on all employees. The company is optimistic in regard to business for 1935, and they already have a nice backlog of orders for shipment in the immediate future.

This company in 1907 purchased the Brownstone Straw Board and Paper Company, which was a bankrupt concern. A new partnership was organized and the new concern started operation under the name of John E. Kieffer & Co., with J. E. Kieffer, who had been in the practical end of paper manufacturing all his life, as general manager.

The property at that time consisted of a frame building with wooden floors, and was in a dilapidated condition. It consisted of one 62-inch trim paper machine with a daily capacity of about six to seven tons of rag wrapping or bogus paper.

The partnership made progress and in 1910 the frame building was torn down and a modern brick building with concrete floors was substituted in all departments. Additional equipment was added to the one machine so that production was increased to about ten ton per day, and at that time the owners decided that the company should be incorporated, and the new company was thereafter known as the Kieffer Paper Company.

On account of increased demand for their products, in 1914 an additional paper machine was added, as well as additional beating capacity, which increased the production to about eighteen ton per day, and the demand for their various Products again increased to such an extent that in 1920 the Officers decided to add a third paper machine, which they did and which necessitated the entire re-building of their machine room and finished paper warehouses. This contemplated increased production, necessitated also the entire re-building of their boiler room and installation of modern water tube boilers equipped with mechanical stoking equipment. Also at that time the Officers decided to dissolve the Corporation and continue business as a Common Law Trust. This type of organization was well suited to their needs and they are still operating under this system.

Installation of the third paper machine increased the production to thirty to thirty-five tons daily capacity and the demand for their product until the end of 1929 was such that they operated their plant to full capacity. During the period, 1920 to 1931, they developed several products that met with instantaneous success in the paper trade, among which was an indented paper (covered by United States and Foreign Patents) marketed for some purposes under the trade mark "Shoksorb." On account of the superior cushioning qualities of Shoksorb made under these patents, the Company a few years ago developed a method of applying a liner on the Shoksorb indented sheet and this product is now well-known and extensively used among the paper jobbing trade. The Shoksorb lined sheet as well as unlined sheet is being used by a large number of nationally known industries for interior packing of their products in paper, wood and other containers. The Kieffer Paper Mills have considerable pride in the fact that they still have as customers the first paper jobbers to whom they sold their first cars of paper.

About three years ago they developed an improved type of indenting rolls, made in such a manner that this New Shoksorb has nothing but indentations and projections on both sides of the sheet. That is, there is no flat surface on this modern sheet of indented paper, and all of their Shoksorb, the lined as well as the unlined is now being furnished exclusively by request of all their customers as the superiority of this new type Shoksorb over the previous type is said to be easily recognized. The company has applications for patents on this design, as well as numerous other applications on file to protect their various cushioning papers.

The demand for their New Type Shoksorb has lately been so heavy that they were compelled to equip their No. 3 paper machine to manufacture this grade of paper, and they are now in a position to furnish the lined Shoksorb in rolls and sheets any width up to 40 inches wide, and the unlined can be furnished in any width rolls or sheets up to 64 inches wide.

The patented Indented product is used by other manufacturers in the production of various products for different purposes under license issued by Kieffer Paper Company on its patents. Among such Licensees are the Philip Carey Manufacturing Company at Cincinnati, Ohio.

The Schmidt & Ault Paper Company, York, Pa., are licensed to manufacture Shoksorb paper, and they have the exclusive territory for this product for delivery East of the Ohio-Pennsylvania line and North of the Virginia-North Carolina line. Their product is an exact duplicate in every respect as that furnished by the Kieffer Paper Mills, and all inquiries for Shoksorb for delivery in their territory should be addressed to them.

Obituary

A. S. Hooper

Ai Scott Hooper, assistant manager of the Bayless Pulp and Paper Company, Austin, Pa., died recently in Austin. Mr. Hooper's death was briefly mentioned in a recent issue of the PAPER TRADE JOURNAL.

Mr. Hooper was born in Cumberland Mills, Me., and

AI SCOTT HOOPER

was aged 53 years. He was educated at the Westbrook High School and spent two years at the Massachusetts Institute of Technology, Boston, Mass.

In 1912 he became connected with the American Writing Paper Company at Holyoke, Mass. From there he went to Philadelphia to become connected with the William & Martin Nixon Company and then went with Dill & Collins, Inc., with which concern he was connected for eleven years.

Later Mr. Hooper was general superintendent of the Albemarle Paper Manufacturing Company at Richmond, Va.; then he went to the Pacific Coast to become manager of the Cascade Paper Company.

From there he became connected with the International Paper Company at Corinth, N. Y., going later to the Cherry River Paper Company at Richwood, West Va. More recently he was connected with the Bayless Pulp and Paper Company as assistant manager.

Mr. Hooper was buried at Cumberland Mills, Me., with Masonic rights. He is survived by his widow, Florence, his mother and his brother, Grover.

Marvin R. Higgins

Marvin Randolph Higgins, chairman of the Executive Committee of the Crown Zellerbach Corporation, died Wednesday night, March 20, at his home in Palo Alto, California.

Marvin R. Higgins was an outstanding personality in the paper industry on the Pacific Coast. He occupied a number of important positions in that industry over a period of years, and was recognized by everyone in the trade as a man of the highest ideals, of outstanding integrity, benevolent and genial personality. He did much to inculcate in the standards of practice in the paper business of the Pacific Coast, the highest ethics and best possible relations among its members.

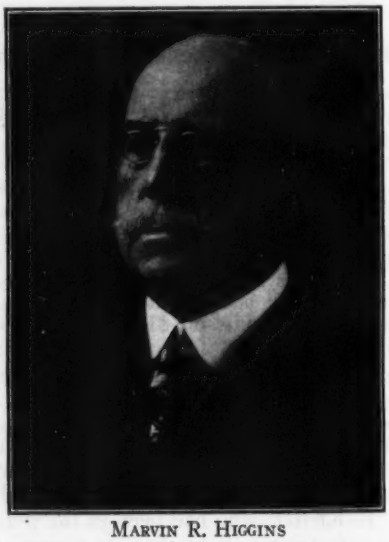
He was president of the Pacific States Paper Trade Association for six years, and the last three terms were consecutive. He declined to serve the association for another term. At the Convention in Del Monte in May 1928 the following resolution was adopted:

"A TRIBUTE—As we are now to part company officially with our respected and well beloved president, Mr. Marvin R. Higgins, we want him to know what is in our hearts and our minds. It is with sincere regrets we learn that he has declined to serve our association another term, for we feel the need of his able leadership to carry out the plans and policies of our association for the coming fiscal year.

"Mr. Higgins has given generously of his time and ability during the full period of six long and busy years as president, from May, 1918, to May, 1919, and from May, 1923, consecutively to May, 1928. Even when he was not our president he worked with us in the ranks, laboring unceasingly for the benefit of the paper industry on the Pacific Coast.

"He has brought to the Pacific States Paper Trade Association the respect of the paper merchants and manufacturers of the Nation. He closed his office with the admiration and respect of all those who have had the benefit of his wise counsel, his keen knowledge and his vast fund of information.

"On behalf of all the members of this Pacific States Paper Trade Association and others in the paper industry who do not belong, yet were aided by his efforts, we thank Mr. Higgins most sincerely and hope for him a long and happy life as our President Emeritus, fellow worker and friend. May we still be blessed with his presence, advice and guidance for many years to come, and we fervently



MARVIN R. HIGGINS

hope that his example as president may be a guide to future presidents who are to serve our association.

"PACIFIC STATES PAPER TRADE ASSOCIATION

"F. M. Couch, President

"Chas. Kahn, Secretary-Treasurer

"Adopted this twelfth day of May, 1928,

"Del Monte, California."

Mr. Higgins was born in Hillsboro, Ohio, and in his early years after teaching school, he was twice elected Court Clerk of Clinton County. He studied law and was admitted to the Bar in that state.

He moved to California in the early 90's. He served three years as secretary to Governor H. H. Markham.

He resigned to accept the position of vice-president of the Pacific Mutual Life Insurance Company. Later he joined the Zellerbach interests and was from the first a strong factor in the forward-looking activities of this large paper concern.

Mr. Higgins was also president of the California Cotton Mills and chairman of the Board of National Automotive Fibres, Inc., Oakland, California.

He was the first Potentate of Al Malaikah Shrine at Los Angeles.

He and his wife were prominent in the Christian Science movement on the Pacific Coast and took a very active part in the building of the Christian Science Sanitarium in San Francisco, and he served as a trustee for a year after the building was completed.

The funeral services were held on March 22 at Cypress Lawn and were largely attended by a number of men and women prominent in the Graphic Arts and Paper Industry.

Paper Sacks Replacing Jute in Germany

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 10, 1935—Paper is supplanting jute to an increasing extent in Germany in the manufacture of sacks and bags, according to a report from Vice Consul D. H. Buffum, Leipzig, made public by the Commerce Department. This development, it is pointed out, is one of the interesting changes in German production resulting from the scarcity of raw materials in the textile industry.

Through technical improvements it has been found possible to produce a paper product which compares very favorably with jute products and which can be used even for packing relatively heavy goods with the exception of flour and sugar. For the latter purposes, artificial fiber fabrics are being used successfully, it is stated.

Improvement in manufacturing technique resulted in a marked increase in the production of paper bags in Germany during 1934 compared with the preceding year, the report states.

Brown Co. Increases Wages

GORHAM, N. H., April 15, 1935—The Brown Company, which operates paper mills here and in Berlin, has announced a 5 per cent wage increase to 1200 hour workers, effective April 11. The increase is a partial restoration of former wage scales.

The 1934 business report of the company, just released, showed it had increased sales amounting to more than $3,000,000 for the twelve months and a sales increase of 23 per cent for the first four months of 1935.

Gross business profits were given as $311,735, as compared with a loss of $276,183 the previous year.

Paper People Sail

Wilfred Graham of the Franc-Graham Paper Company, 25 W. 15th street, New York, will sail for England on Friday, April 19 aboard the Berengaria of the Cunard-White Star Line. Mr. Graham was born in England and came to this country as a young boy with his parents and brothers and sisters. He is making the trip to spend a short visit with numerous relatives whom he has not seen since his boyhood days.

Miss Alice B. Massa, treasurer of the A. B. Massa Paper Corporation, 358 Fifth avenue, New York, sailed for Bermuda on the S. S. Queen of Bermuda on Tuesday, April 16, with her son, Herbert Henry Miller, Jr. They will spend a few weeks at the Castle Harbour while in Bermuda.

TO OPEN PAPER BIDS MAY 20

(Continued from page 13)

In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

Report on Envelopes and Quantities Needed

The same specifications committee has made the following report on envelopes and the quantities needed for the annual supply:

The Committee on Paper Specifications respectfully submits its Twelfth Report and the accompanying recommended schedule for plain envelopes in common use by two or more departments, establishments, or services of the Government in the District of Columbia for the term of one year beginning July 1, 1935.

Lot 103 and 107 have been changed from Substance No. 56 to Substance No. 64 to conform to the balance of the items in this class.

This schedule embraces 73 lots, which is three less than called for in the previous schedule. The quantity estimated for the term of one year beginning July 1, 1935, is 41,570,000 as compared with 41,897,000 envelopes for the previous contract period of one year.

29,115,000 Kraft.
10,535,000 Writing, Sulphite, White and colored.
230,000 Fine Writing, White and Colored.
345,000 Ledger, White.
1,115,000 Bond, 50 percent Rag, White.
230,000 Bond, 100 percent Rag, White.

New National Adhesives Handbook

"How to Prepare and Use Glues, Pastes, and Gums" is the title of an instructive 24-page pocket-size handbook just issued and copyrighted by the National Adhesive Corporation, 820 Greenwich street, New York, world's largest producer of adhesives. This handbook is one of a series of educational brochures published by National Adhesives to show users of glues how they can secure better results and stop waste due to improper handling. It contains information never before available in printed form, according to the company's sales promotion department.

Starting with the storage and care of glue, the handbook discusses in full such pertinent points as opening the barrel, removing the bung, and the proper use of spigots. It goes on to discuss the prevention of evaporation and "crusting," the importance of keeping equipment clean, and the correct methods of thinning and diluting prepared glues and pastes.

Recommended methods of preparing and applying various types of dry glues, paste powders, and flexible glues are discussed at length. Separate sections are devoted to an explanation of fluidity, viscosity, and solid content, and to the use of gums for gluing transparent cellulose tissues. Elaborating on this latter topic, National Adhesives has issued a separate copyrighted 12-page pamphlet "How to Glue Cellophane Sylphrap, Protectoid, and Kodapak," explaining how to tell these various tissues apart, how to distinguish moisture-proof tissues from non-moisture-proof, and how to determine the type of adhesive required for various gluing operations.

The company offers to send either or both of these handbooks to any interested user of adhesives requesting them. They may be secured from National Adhesives' New York headquarters, or from its offices at Chicago, Boston, Philadelphia, San Francisco, or Seattle.

A. R. McConnell Heads De-Inking

The De-Inking Supply Corporation, 400 West Madison street, Chicago, announces the election of A. R. McConnell, formerly with Sears, Roebuck & Co., as president.

The De-Inking Supply Corporation has an agreement with the Snyder Maclaren Processes, Inc., New York City, whereby the De-Inking Supply Corporation exclusively controls the sale of licenses to paper mills making pulp for their own use and to commercial manufacturers desirous of manufacturing pulp for resale, to manufacture various grades of pulp from both ground wood and from free of ground wood waste papers printed with carbon ink under the issued patents of the Snyder Maclaren Processes, Inc.

An important New England manufacturer of paper and paper board has been very successfully de-inking waste paper under the Snyder Maclaren Processes patents for over a year.

It is claimed that pulp manufactured from waste paper printed with carbon ink, which has been removed by the Snyder Maclaren process, retains all the characteristics of the original pulp from which the de-inked paper was manufactured.

It is equally simple to remove ink from printed ground wood rotogravure sections, newspapers, wall paper, white and colored ledger, books and magazines, and any other class of waste paper either free of ground wood, containing ground wood, or a combination in any proportion of both.

The Snyder Maclaren process of de-inking is very simple to install in an operating paper mill, does not require a large outlay in machinery equipment and cost of machinery, and de-inks waste paper at a comparatively low cost.

Mr. McConnell will make his headquarters at the New York office of the De-Inking Supply Corporation, 122 East 42d street, New York City.

Robert Gair Acquires Container Plants

E. Victor Donaldson, president of Robert Gair Company, Inc., announced last week the acquisition of London Shipping Containers, Ltd., of London, Ont., and of Canadian Containers, Ltd., of Windsor, Ont.

The acquisition of the Windsor and London plants marks the further extension of the Gair interests in the Canadian paperboard industry, the company having plants in Toronto, Campbellford, Frankford, London, Windsor, Hamilton and Montreal.

The plants of London Shipping Containers, Ltd., at London, and of Canadian Containers, Ltd., at Windsor, have been headed by Ray Lawson of London who took over the plant in that city more than 10 years ago and who in 1929 organized the Windsor plant to take care of the industrial development in that section. Mr. Donaldson succeeds Mr. Lawson in the presidency of both companies.

The plants at London and Windsor are devoted to the fabrication of corrugated shipping cases and containers and will continue to be operated by their present management, maintaining the same standards of service to their customers in both territories.

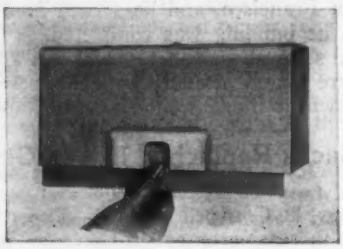
Power Engineers Meet

KALAMAZOO, Mich., April 15, 1935—The Power Engineer's Society held their monthly meeting in the main office of the Kalamazoo Paper Company, Tuesday evening, April 9. Darrel C. Wicke of the Kalamazoo Police Department delivered a lecture, illustrated by slides, on "Identification and Finger Printing."

New Roll Paper Dispensing Cabinet

A new roll paper dispensing cabinet is announced by Paper Dispensers, Inc., with offices in Chicago and factory in Green Bay, Wis. The cabinet known as "Kwik-Grip" is designed to dispense all types of roll paper whether perforated or unperforated, and is made for standard size tissue and towel; for wax roll 5 inches in diameter by 11 inches long, and in special sizes to order. Standard colors are white, ivory and green, or special colors if desired.

The cabinet illustrated here is packed in an individual carton; 25 in a shipping case. It is especially adaptable



NEW ROLL CABINET

for use in grocery and delicatessen stores, meat markets or any place selling food which is wrapped in paper and must be kept sanitary up to the minute it is handed to the customer, and for home use with roll towels or wax paper. This cabinet can be used on the counter or mounted on the wall. It is unique in design, yet practical; simple in construction and not expensive. Paper is gripped through the "latches" which automatically close after about an inch of paper has been removed from the cabinet. Any quantity of paper may be torn off, one inch or ten feet. The "latches" are only open while the fingers gripping the paper are passing through them.

Inside of the cabinet the roll of paper is not suspended at its ends. It is merely placed in the cabinet with about two inches of paper left to hang over the "V" shaped construction so that when the cover is closed it is ready for operation. Refilling only requires five seconds. The particular design of the cabinet provides the proper friction on the roll of paper, holding it in place while the roll is being revolved in removing the paper. Inside of the cabinet there are no "followers" or mechanisms to hold the paper in position. There is nothing to get out of order. The special design of the cabinet itself holds the paper in position. This is one of its exclusive features so that down to the last inch the paper can be gripped and withdrawn as needed. This is decidedly a new and different paper dispensing cabinet.

Bids for Government Paper

WASHINGTON, D. C., April 17, 1935—The Government Printing Office has received the following bids for 10,920 pounds of M. F. book paper at 5 cents per pound: Whitaker Paper Company, R. P. Andrews Paper Company, Barton, Duer & Koch Paper Company, Perkins-Goodwin Company, Mathers-Lamm Paper Company, and Dobler & Mudge.

The Government Printing Office has received the following bids for 36,000 pounds of M.F. book paper at 10.09 cents per pound: Mathers-Lamm Paper Company, Perkins-Goodwin Company, Barton, Duer & Koch Paper Company, R. P. Andrews Paper Company, George W. Millar & Co., American Writing Paper Company, Whitaker Paper Company, and Champion Coated Paper Company.

New Lunkenheimer Air Nozzles

Two new designs of bronze air nozzles, with renewable, nonmetallic discs, have been placed on the market by the Lunkenheimer Company, Cincinnati, Ohio. One is made with integral hose end, and the other with female pipe end. Either pattern can be furnished with pointed, flat, or extension tip.

FIG. 1840-PT

These air nozzles find wide application for blowing dust, dirt, chips, filings, borings, sand, lint, liquid deposits and other matter, and quickly pay for their initial cost in savings of time and labor, and prevention of air wastage. They are more effective and safer to use than brushes, rags and hand bellows.

The disc is especially compounded for air service, and easy renewability insures seat tightness. To renew a disc, simply unscrew the nut at bottom of nozzle and remove spring and old disc; insert a new disc and reassemble.

FIG. 1841-PT

Unrestricted flow area permits free passage through the nozzle of scale and grit that might be carried with the air from the pipe line.

Provision is made for hanging the air nozzle on a nail or small hook when not in use.

Lunkenheimer Air Nozzles are fully illustrated and described in booklet F-533A, copy of which will be sent upon request.

Establish Pulp Warehouse at Ogdensburg

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., April 15, 1935—Representatives of the Port Royal Pulp and Paper Company of St. John, N. B., was here this week inspecting suitable sites for use as a warehouse for pulp distribution to paper mills in this section. The company operates a chain of vessels on the St. Lawrence River and Great Lakes in conjunction with its business and a storage center in this city is expected to facilitate the handling of pulp consignments. A building at the Coplan steel property was selected and arrangements for a lease is expected in the near future.

Paper Men Get Patents

[FROM OUR REGULAR CORRESPONDENT]

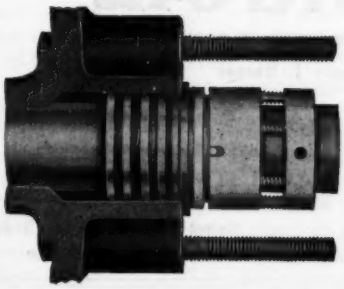
GLENS FALLS, N. Y., April 15, 1935—John Campbell and Lancelot O. Rolleston, of this city, have been awarded patents on an improved method for treating and bleaching cellulose material, according to the government department. Application for patent was filed in September 1930 and in approving it the department allowed several claims of originality and improvement. Patent rights have been assigned to the International Paper Company.

Waterfalls Paper Mills Move Office

The Waterfalls Paper Mills, Mechanic Falls, Me., are moving their New York offices from 386 Fourth avenue to 21 East 40th street where they will occupy larger and more desirable quarters.

Rotating Shaft Packing for Centrifugal and Rotary Pumps

This new type of mechanical seal, made by the Durametallic Corporation, 2113 Factory street, Kalamazoo, Mich., known as Dura Seal and protected by patents, has been developed to seal more effectively power equipment such as pumps, exhausters, etc., working gritty and/or corrosive liquids and gases. It has given long and efficient service on acids, alkalies, and dirty liquids containing solids. It can be applied to ordinary stuffing boxes.



It will be clear at once that a wide variety of metals and other materials may be used in the construction of Dura Seal so that it can be made to resist corrosion by practically all chemicals and that grit cannot get between the seal ring and the face of the bushing or gland.

On higher pressures an assembly in which the member rotating with the shaft, or Dura Seal proper, is placed entirely within the stuffing box and revolves against the faced off gland or special stationery bushing should be used.

On moderate pressures (up to 60 lbs.) an outside assembly is recommended in which the seal ring rotates against the gland faced off and reversed or better still, against a special bushing extending into the stuffing box with its outer face lapped in against the seal ring of the rotating member. This bushing, whether used in the inside or outside assembly, may be so constructed as to provide lubrication between the two ground sealing faces.

Permex Flooring

Permex flooring, made by Hammermill Products, Inc., of Erie, Pa., may be used to great advantage in many departments of a paper mill.

Permex comes to the job already molded and cut into pieces ready for laying. It is molded in slabs 4 feet by 6 feet, in thicknesses from ⅜ inches to 1½ inches and is cut at the company's plant into size according to the requirements of the job. One size commonly used is 11½ inch square. Pieces as large as 3 feet by 4 feet have been laid. All that is necessary to do when Permex comes on the job is to lay it in either hot or cold cement. Permex can be laid over floors already installed, either wood or concrete.

Permex does not require a special base. It is simple to install and requires only what is necessary in a base suitable for any floor covering, namely, a level surface which should be clean and as warm as possible in order to obtain the greatest adhesion between the floor covering and the base.

Permex can be walked on immediately after it is laid. The only care necessary is to prevent trucking or moving heavy machinery over the newly laid blocks for two or three hours at the most. After that time the blocks are rigidly fixed in the adhesive.

It is economical, durable, does not shrink, is clean and is waterproof and acidproof. An interesting circular regarding this new flooring may be obtained gratis from Hammermill Products, Inc., Erie, Pa.

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FINDS AGAINST 30-HOUR WEEK

After an exhaustive study the National Industrial Conference Board has reported unqualifiedly against the proposed thirty-hour week as a remedy for unemployment and other economic ills.

Explaining why it does not believe that adoption of such a curb on working hours would stimulate recovery by increasing the purchasing power of wages, the board says in its report: "If, at the present time, 1,000 persons were able to buy a total of 10,000 units of goods for $100,000, after the adoption of the thirty-hour week 1,100 persons would be able to purchase the same amount of goods for $110,000. More money would thus be put in circulation, but there would be no increase in the demand for goods." It would be different, the board says, if it were possible under the thirty-hour week to increase the per unit output per man and to decrease the per unit cost of goods. The opposite, however, would happen, according to the board.

Industry as a whole does not now average more than thirty-four and one-half hours a week, the report says, so the increase in employment would be relatively small.

It points out that the burden would be unequally shared in industry if the short week were adopted, because it would be more of a hardship on those industries which produce goods in the cost of which labor is the largest item. These, the report says, include the durable goods industries, at present more in need of stimulation than of further burdening. There might even be discriminatory effects within one industry, according to the report, because some financially strong concerns could absorb the increased costs, while their competitors could not.

The report predicts various kinds of labor disturbances and increases in the prices of most goods if the thirty-hour week is adopted. Workers who would find their pay as well as their hours decreased would become irate and might strike, it is suggested, and their purchasing power would suffer. This would decrease the standard of living.

Conclusions of the study are summarized as follows:

The thirty-hour week might increase the volume of money in circulation, but it would not increase the purchasing power of wages. There would, therefore, be no increase in the demand for goods and no stimulus to business revival.

There would be some increase in employment, but it would be slight compared with the number of workers now unemployed.

The thirty-hour week would penalize those industries where labor costs are a large part of total costs, thus creating unemployment.

The thirty-hour week would affect most unfavorably the durable goods industries in which unemployment is greatest.

Prices of most good would rise, especially prices of necessities. The millions of workers now employed, whose weekly earnings would not increase as a result of the thirty-hour week, would suffer a reduction in real wages.

The decrease in real wages would result in a demand for higher wage rates, causing labor disturbances.

A standard of living like that characterizing the period from 1922 to 1929 could not be sustained by the thirty-hour week.

There is no evidence that an excessive labor supply exists and that it is necessary to reduce working hours to avoid permanent unemployment.

The purchasing power of farmers would be reduced. Also, the ability of American producers to compete with foreigners both in domestic and foreign markets would be weakened.

The final cost of manufactured products would be increased 12 to 14 per cent under the thirty-hour week.

The thirty-hour week would not apparently reduce the cost of Federal unemployment relief.

CORNSTALKS CANNOT COMPETE WITH WOOD IN PAPER MAKING

While it is possible to make paper from cornstalks, the product would cost more than papers made from wood, according to recent studies completed at the National Bureau of Standards.

This work was undertaken to find just what the possibilities are for converting a part of this large annual farm waste into paper. The Bureau's technicians were able to make clean, white writing paper from cornstalks despite serious difficulties presented by the structural characteristics of the plant and by the excessive amounts of dirt always clinging to field-gathered stalks. However, when costs are considered, it does not appear that cornstalks can compete successfully with wood as a raw material for paper under present conditions, it is pointed out.

Special mechanical preparation of the stalks was found

essential to successful pulping with chemicals, owing to structural peculiarities of the type of plant stem. The hard outside part of the stem contains the bulk of the fibers of suitable length for paper, and the most satisfactory results in pulping were obtained by using only this outside shell or cortex. The cortex was separated from the pith, and shredded by special mechanical processes.

The cornstalk fibers were found to be too brittle for use in ordinary brown wrappping papers where strength is the prime requisite, and although satisfactory writing papers were made, the yields were very low. The results indicated that less than half as much paper can be made from a ton of stalks as from an equal weight of wood. Also, cornstalks are so light and bulky that much more pulping equipment and chemicals are required than for wood.

From a consideration of all of the costs involved in making paper from cornstalks as compared with wood, it is estimated that the stalks could not compete successfully with wood, even if wood were to double in price, unless profitable uses are developed for by-products or parts of the stalk not used in paper making, it was stated.

To Discuss Southern Pulp

The very latest developments in the use of Southern Pine for pulp and paper manufacture will be discussed by William G. MacNaughton, assistant director of the Pulp and Paper Laboratory at Savannah, Ga., on June 6 at the convention of the American Pulp and Paper Mill Superintendents Association, Hotel John Marshall, Richmond, Va.

Mr. MacNaughton, who is one of the foremost pulp and paper technologists in the United States, has been in active charge of the development of processes for the use of Southern pine as a raw material for white paper, under the supervision of Dr. Charles H. Herty, director.

Mr. MacNaughton will review the successful progress that has been made in converting Southern pine into ground wood pulp, which is the principal raw material for news print paper.

His address will be in the nature of a follow up of the address delivered at the superintendents' convention last June by Dr. Herty. Mr. MacNaughton will also tell of the successful use of Southern pine as a raw material for the manufacture of rayon.

John R. Ryan Co., Inc. Formed

John R. Ryan formerly connected with International Paper subsidiaries, and for the past two years representing the Monroe Paper Products Company, Monroe, Mich., in the East, has formed a company to be known as the John R. Ryan Company, Inc., 2 Park Avenue, New York.

The company will continue to represent the Monroe Paper Products Company in the East, and a group of selected and diversified paper mills. The company will be prepared to guarantee credits on all its customers, and offer its mills a large percentage of payment in advance on all papers shipped against bona fide orders.

This arrangement for credits and payment of mill invoices will be a unique feature of the John R. Ryan Company, Inc., and the company invites any mill interested in learning the features of such an arrangement to write for further information.

Mead Corp. Earns 94 Cents on Pfd. Stock

DAYTON, Ohio, April 15, 1935—Mead Corporation and subsidiaries for the year ended December 30, 1934, reported consolidated net profit, after all charges, depreciation, interest, taxes, amortization, contingencies, discounts, minority interest, etc., of $31,436, equal to 94 cents a share on 33,312 shares 6 per cent cumulative preferred stock outstanding, on which there is a dividend arrearage of $15 per share. This compares with consolidated net loss of $384,619, after charges for the year ended December 31 (correct) 1933.

Dill & Collins, Inc., acquired late in 1932, showed a net loss of $146,918, which is not consolidated in the Mead Corporation report. The loss was partially offset by a profit of $112,500 from the sale of inoperative equipment, and the balance has been charged to reserve for contingencies on the books of that company.

Net sales were $12,277,932 against $10,496,619 the previous 12 months, an increase of more than 15 per cent.

Consolidated balance sheet as of December 30, 1934, showed current assets, including $619,207 cash, to $5,063,142 and current liabilities $998,503, against $4,379,748 and $736,356, respectively, December 31, 1933. Total assets amounted to $36,653,095 compared with $35,464,668.

George H. Mead, president, stated "while the 15 per cent gain in sales is gratifying, it has proven impossible on account of over capacity of the industry and the problems faced by customers, particularly in the white paper division, to raise prices sufficiently to cover increased cost of manufacturing so as to enable the corporation to earn a normal profit on capital invested."

Sinking fund payments, on the first mortgage bonds totaling $367,000 were met. In addition the corporation had at the end of the fiscal year $423,000 par value of bonds, more than sufficient to meet the 1935 sinking fund requirements. During the year the funded debt was reduced to $7,881,000 from $8,433,000.

In order to further diversify and conservatively widen merchandising facilities of the Mead Corporation on July 14, 1934, the corporation purchased from receivers of the George W. Wheelwright Paper Company, its assets, including a mill at North Leominster, Mass.

Efforts in the past year to improve quality of products, develop new products, and accomplish more economical manufacturing have contributed to favorable results during the first quarter of 1935, and "it is believed the Mead Corporation is in a satisfactory position to share in improved business conditions as they occur," Mr. Mead said.

No Increase in Wages Expected

CARTHAGE, N. Y., April 15, 1935—Paper mill manufacturers of Northern New York contend that it is inadvisable just now to sign any new wage and working contracts for the next year on the basis that has prevailed for some time and no increases in wages of employees are anticipated. Existing wage agreements are to be extended until July 1 and prior to then a conference is scheduled between manufacturers and union officials in order to negotiate terms. At a recent meeting it was brought out that uncertainty regarding extension of the NRA is a large factor in the hesitancy of manufacturers to sign new agreements on the customary May 1. At that conference representatives of several of the large paper mill concerns in this country and Canada were in attendance in addition to officials of the International Brotherhood of Papermakers.

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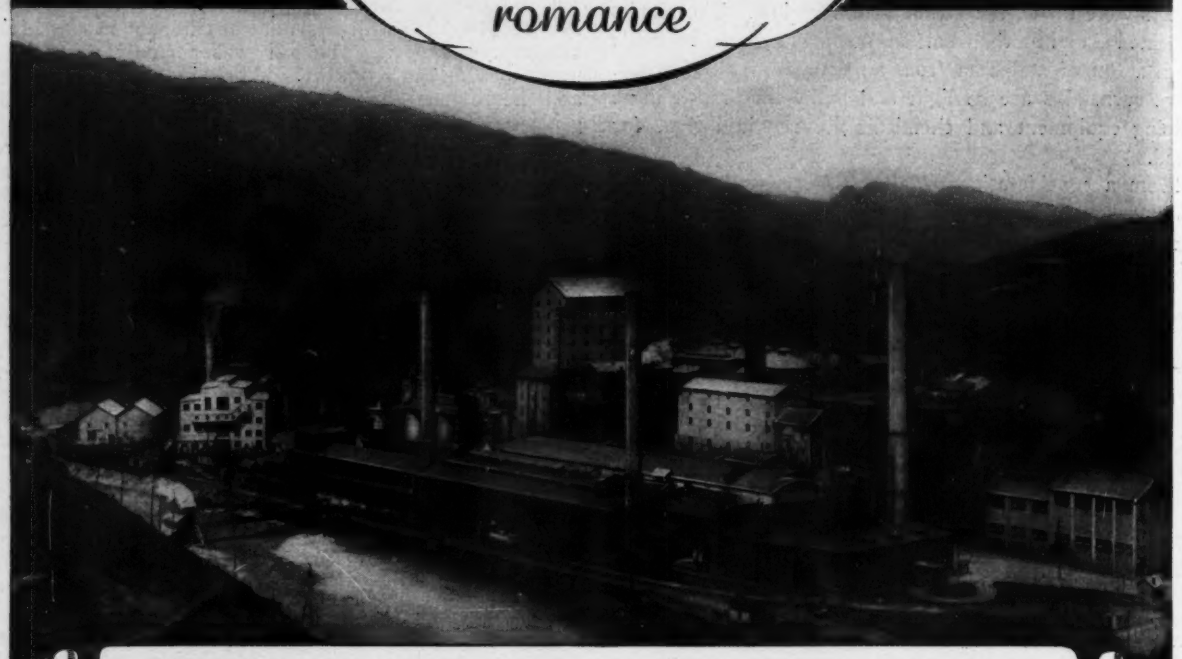

SERVING INDUSTRY FOR FORTY YEARS

SINCE early Colonial days, the deep mineral deposits at Saltville, Virginia, have been a continuous source of nature's raw materials. From far and wide, over rough mountain roads, ox-drawn carts once came to Saltville to get their loads of precious salt. In the stirring days of '61-'65, Saltville was the only accessible salt supply in the South.

During the past forty years, as one of Mathieson's sources of raw materials, the rich mineral deposits at Saltville have rendered distinguished service to many of the nation's foremost industries. For Mathieson's Saltville Plant annually draws thousands of tons of salt and limestone from these deposits to serve as raw materials in the manufacture of Mathieson Soda Ash, Caustic Soda and Bicarbonate of Soda.

These abundant natural resources on Mathieson property, together with nearby supplies of the finest coal, place Saltville in a particularly favorable position in respect to raw materials. Such resources are not only invaluable assets in the efficient production of industrial alkalies; to those who specify Mathieson Chemicals, they give added assurance of dependable service at all times.

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Mathieson Chemicals

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Machinery

Method of and Apparatus for Preparing Pulp Stock for Delivery to a Paper-Making Machine. Phillips Dennett assignor to Bird Machine Co. U. S. pat. 1,965.579 (July 10, 1934).—The stock on its way to the paper machines is passed through a suitable number of purifying machines (screens or centrifuges) arranged in parallel; the stream of pulp from the several machines are collected into a single stream, which is thickened if advisable and delivered to the paper machine through a perforated distributing cylinder extending transversely of the direction of the machine.—A.P.-C.

Automatic Pulp Regulator. William R. Morgan. U. S. pat. 1,966,638 (July 17, 1934).—The pulp supply on its way to the paper machine passes through a tank provided with a large float which controls the valve in the water supply pipe. Increases in the consistency of the stock raises the float and causes the water valve to open wider, and vice versa.—A.P.-C.

Dandy Roll. Ralph E. Freeman assignor to Cheney Bigelow Wire Works. U. S. pat. 1,969,000 (Aug. 7, 1934). —The sub-frame of the roll is formed of heavy round wire bent to form a coarse network, the contacting portions of adjacent wires being soldered. Longitudinally positioned triangular rods are soldered by their bases to form a cylinder in the ends of which are secured spider heads. The outer edges of the triangular bars are notched to receive a spirally wound wire; the latter is formed with a flat base, vertical sides fitting snugly in the notches of the triangular bars and a tapering slightly rounded top which forms a bearing surface for a wire-mesh covering.—A.P.-C.

Method and Apparatus for Showing Uniformity of Sheet Formation in Paper Machines. Arthur E. Broughton. U. S. pat. 1,969,546 (Aug. 7, 1934).—The vacuum on the suction boxes is maintained constant, *e.g.*, by means of the apparatus described in Broughton's U. S. pat. 1,-962,477, of June 12, 1934. The water from the suction boxes and the suction couch is delivered into a common seal box provided with a weir, so that the level of the water in the box remains constant as long as conditions on the machine wire are constant. Variations in the freeness or weight of the sheet produce a corresponding variation in the water-level in the seal box, which is indicated by means of a float connected to a pointer which moves in front of a graduated dial.—A.P.-C.

Duo-De-Hydration Press Part. Charles L. Ellis. Paper Mill 57, No. 28:4-5 (July 14, 1934).—Duo-De-Hydration consists in the replacement of the suction turning roll and primary press roll section of cylinder machines by two Downington extractor rolls (wire-faced roll over which is mounted a weighed rubber-covered roll) and a suction press roll. Its development and advantages are outlined.—A.P.-C.

Solution of Drying Problem. William V. Knoll. Paper Mill 57, No. 21:12-17 (May 26, 1934).—A general discussion of the causes of improper drying and the factors of proper drying.—A.P.-C.

Process of Drying Crepe Paper. John C. Corcoran assignor to Superior Tool and Manufacturing Co., Inc. U. S. pat. 1,967,609 (July 24, 1934).—The moist creped paper is fed by gravity between a pair of drying felts which move in unison at a speed lower than the delivery speed of the paper and pass around a number of steam-heated drying rolls. Only the last drier of the upper and lower tiers are positively driven.—A.P.-C.

Method of Controlling a Web of Paper in a Winding Machine. James A. Cameron assignor to Cameron Machine Co. U. S. pat. 1,966,331 (July 10, 1934).—The invention provides mechanism whereby the tension in the web may be made smaller at the winding core than between the unwinding stand and the slitters. This is effected by passing the web around a "breast roll" near the winding drums, driving the breast roll from the winding drums by means of a loose belt and providing a belt tightener so that the breast roll assists in driving the web (thereby reducing the tension in the web). Full tension is maintained at the start of the winding so as to have a hard center to the rewound roll, and is gradually reduced in the course of winding by progressively tightening the belt.—A.P.-C.

Comments On Ground Wood Mill Practice In America*

By W. E. Brawn[1]

Abstract

A review of current mechanical pulping practice covering grinders, pulpstones, pulpwood, labor and supervision and a summary of a survey made by the TAPPI Mechanical Pulping Committee to observe the range of equipment and variety of products of the industry.

The life of the ground wood pulp industry on the North American continent is well within the memory of many of our so-called "old-timers"; in fact, it has about fifteen more years to go before it can celebrate its diamond jubilee if that is what we would call seventy-five years of operation since its beginning. The story of the industry's development, through its sixty years of existence, is just as remarkable as that of many other industries, and a few points of comparison, then and now, are very interesting.

For instance, we find a growth in yearly production from a few tons per year to five million tons per year. There was but one mill, located in Massachusetts, and now we find 110 mills located in 17 states extending from the Atlantic to the Pacific, and 66 mills throughout Canada. The early mill produced one to two tons per day, while a modern mill may turn out 500 tons. As to its application, ground wood pulp was used in very limited quantities to replace rag and sulphite and consequently to reduce the cost in a few papers, while today it is the basis of the great newspaper industry which alone uses 3,000,000 tons per year. Such an industrial growth could have been attained only through a real need for the product and ability to meet the requirements. The developments of the last 15 years could have been made only through the application of scientific principles in the design of equipment and scientific study of the underlying principles of mechanical pulp production to produce correct quality in large quantity.

It is not the purpose of this paper to trace the development of the industry from its beginning to its present highly organized state but rather to comment on various conditions as we find them, and to point out that, in common with other industries, the present is the beginning of another future. What this future will be, and the extent of its development in any direction, will naturally depend on economic conditions. As science and knowledge make advances, new improvements and change of ideas must naturally come about, but at the present moment, economics seem to be the spark plug. Costs are rising but prices stay put. The mandate seems to be "prices are high enough," and if we endeavor to reduce costs, we are likely to run into some regulatory measure set up to keep old man "supply" shaking hands with his customer "demand." However you may look at it, "profit means improvements" in just the same way that "improvements mean profits." These are fundamental principles which have not been changed.

Ground Wood Papers

Looking at the ground wood pulp industry itself, we find it to be the basis for the production of news print, novel news for many periodicals, catalog papers for our great mail order houses, low priced papers for hanging, box coverings, board liners, tablet, writing, carbonizing, coating, covering, and many other uses. There are also the kindred pulp products of box-board and wall-board, fibre cartons, cases, containers and moulded products. Formerly one grade of ground wood met nearly all the conditions, but today each product demands its own quality of pulp, and the pulp which is suitable for one may be entirely unsatisfactory for the other. We have only to think a moment of ground wood pulp for the manufacture of news print paper on a paper machine operating at 1500 feet per minute, and compare it with pulp for a high-grade ground wood specialty paper made at 300 feet per minute, to recognize the spread of requirements and realize that control of quality has had to go hand in hand with the great advance in unit production.

Grinders and Pulpstones

As paper machine production has become greater, grinder types have changed so that we now find many complete installations of the magazine type, grinding principally 4-foot wood. This type is generally recognized as being correct for large installations making news print, where great quantities of a uniform grade of pulp are needed day after day without change. Improved pocket types still remain in favor for specialty grades of paper made in smaller quantities on slower machines, where changes in pulp quality need frequently to be made.

A few years ago, much discussion was entered into in regard to the relative advantages of the various types of grinders and attempts were made to collect various operating data. In order to assist in this work and to give a basis for comparison of information, the TAPPI Ground Wood Committee of 1925 drew up a code for collecting data under various headings as follows:

1. Grinder Data
2. Production Data
3. Power Data
4. Labor Data
5. Maintenance Data

The proposed code was developed and published, together with certain information collected from some 50 mills in the United States and Canada. If operating information is to be compared, there must of necessity be some rule for the comparison and this same code might be revamped to be of some service at the present time. One notable omission in the 1925 code was the comparison of pulpstone data, upon which subject but little stress was laid.

Although at the moment the general principle may seem to be large units for large quantities of uniform pulp, and smaller units for greater flexibility in smaller plants where wide quality variation is essential, it does not follow that this will continue to remain so. Recent developments in pulpstones have changed many of our ideas of control of pulp quality. With all due respect to natural quarried pulpstones, it must be recognized that the artificial stone made of abrasives compounded scientifically to produce desired pulp quality under a given set of conditions has given us a means for eliminating one of the big variables in pulp manufacture. This fact may have a great bearing on the

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[1] Vice-Chairman, TAPPI Mechanical Pulping Committee and Asst. General Superintendent, Pejepscot Paper Company, Brunswick, Maine.

determination of grinder types, for the reason that longer periods of uniform grinding may be had without such frequent stone sharpening, and small mills with a large number of grinding units possibly will find it more economical to change to a small number of large units and still have desired quality control. And further, the artificial pulpstones of the compounded abrasive type made up, as they are, by formula give us a yardstick for the measurement of grit quality which, until recently, could be only a matter of conjecture. The pulpstone side of the question will shortly be reduced to a numerical comparison, as are speeds, pressures, and other items.

Pulpwood

Not all of the problems of the industry lie in type and size of producing units. There is considerable to be learned from a study of woods. The South has a new industry possible within its borders through the use of southern woods, formerly considered valueless for ground wood pulp making. We know that almost any kind of wood can be made into ground wood pulp and that the resulting fiber has the characteristics of the wood from which it comes. Spruce and balsam fir have generally been used because they were plentiful and because they could be transported by water. Jack pine, hemlock, and white pine are the principal other woods being used today. The proof of any pudding is in the eating and therefore many mills can well afford to study their wood supply and see what they can do about grinding woods other than spruce and fir as a means for reducing wood cost, and develop from these woods a pulp satisfactory for the product to be made. This side of the ground wood pulp industry can be developed today better than ever before because of greater control over the various phases of ground wood pulp manufacture.

Committee Survey

The Mechanical Pulping Committee has this year attempted to collect some manufacturing information from interested mills, which has been summarized in the following tabulation. While incomplete, the data is shown herein to bring out the range of equipment and variety of product of today, and the figures are unquestionably worth considerable study.

We find considerable variety in these items. The mills represented cover an entire geographic cross-section of the United States and are mills of comparatively large size. Compared to ten years ago, there is a marked increase in the use of artificial pulpstones and the larger types of units are in more general use. Individual unit production is, in one case, 27.5 tons per 24 hours, or five times the unit production common but a few years ago.

Labor and Supervision

One other subject to which attention may rightly be directed at this time is that of labor and supervision. Formerly, the grinderman in a pulp mill simply had to feed the wood in by hand. keep the pockets moving down, and keep water running into the grinder pit. The foreman decided when the stone needed sharpening, and if one stone was too sharp or too dull, it was averaged with all the others so that the composite pulp from the grinder room was usable on the paper machine. This method produces some pulp that is too fine, with a loss in power and production, on some units, while other grinders may produce pulp which is too coarse, making for a higher tailings loss and an additional load for the refiners. In today's mill, one unit makes as much pulp as was made by five or six units in the past, and no hand-feeding is done. A class of labor is required with greater mechanical skill and a wider knowledge of electricity, mechanics, and pulp making. The superintendent's responsibilities increase; if his fiber quality gets off, serious things happen in the machine room. A modern ground wood mill is tied in directly with the paper machine

MILL NO.	1	2	3	4	5	6	7 Mill "A"	7 Mill "B"	8
General Type of Grinder Used	Pocket	Magazine	.....	Magazine	Pocket	Pocket	.....	.....	.....
Size of Stone—									
Diameter	27x54 and 32x54	62"	27"	62"	54"	54"	27"	54"	54"
Length	.....	54"	54"	54"	27"	30" and 34"	54"	56"	27"
Grade	Natural	Artificial	Natural	Artificial	Artificial & Natural	Artificial	Natural	Natural & Artificial	Natural
Speed—R.P.M.	Water 210 Elec. 275	220	225	240	257	240	200	240	200
No. of Pockets	3	2	3	2	3	3	3	3	3
Length of Wood	24"	48"	24"	48"	24"	24-30"	23"	48"	24"
Pocket Width (right angle to shaft)	14"	30"	14"	26½"	15"	13½-14"	13½"	14"	15"
Size and No. of Pocket Pressure Cylinders	3—14"x16"	2—22"I.D.	3—size 16"	1 each pocket 20.8" dia.	16" dia. 3' grinder	3-16"	1—11¾"I.D.	2—14"I.D.	3—21x16
Pressure Used—									
Minimum	.....	175 lbs.	40 lbs.	35 lbs.	65 lbs.	75 lbs.	.....	.....	.....
Maximum	.....	205 lbs.	60 lbs.	45 lbs.	110 lbs.	95 lbs.	.....	.....	.....
Average	.....	190 lbs.	50 lbs.	42 lbs.	90 lbs.	85 lbs.	50 lbs.	50 lbs.	45 lbs.
Grinding Pressure	48 lb. ave.	60 lbs.	50 lbs.	42 lbs.	51 lbs. per sq. in.	85 lbs.	17.5 lbs.	22.9 lbs.	45 lbs.
Ave. Production of 24 Hrs. per Stone	Water 6½ cds. Elec. 7 cds.	20.6 tons	3T—No. 1 grade 6T—regular	27.5 T.	14 T.	9.5-10.2 T.	4 tons	13.25 tons	4½ tons
H.P. per Ton	54.4 H.P.	53 H.P.	100 H.P.—No. 1 grade 60 H.P.—regular	57 H.P.	45 H.P.	65-68 H.P.	.....	.....	.....
Type of Screens	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal & Flat
Bull Screen Percentage Rejects	.....	.....	.....	.6%	.....	.6%	.....	.....	1%
Knotter Screen Percentage Rejects	.....	.....	.....	.....	None	.1 & .2	.....	.....	.....
Fine Screens Percentage Rejects	.....	None	Total rejects 1½%	5% at screen but saved at refiners	None	8-10	2.5%	1.25%	.....
Other Screens Percentage Rejects	.....	.....	.....	.....	.....	8-10 ahead of refiner .5-1.0 tail of system	.....	.....	.....
Refiners—General type and capacity	None	Roller type 3½ T per day	Not running	Roller 3¼ Tons	Horizontal Stone	Jordan type	None	None	None
Principal use of Ground Wood Pulp	News print & GW Specialties	News print & GW Specialties	Water Fin. Butch., Water Fin. Wrapg., Dry Fin. Butch., Tissue, GW Bond, GW Mimeo, Envelope, Manila	News print	Board Filler	News print		News print, Wrapping, Manilas and Specialties	Wood pulp, Boards and Tag Boards

more than heretofore. A superintendent must be able to understand the quality of paper to be produced and keep in touch with the new equipment and machinery developed for producing required grades of pulp. These changes in personnel requirements must be considered, and our institutions preparing men for the pulp and paper industry can well direct more attention to the ground wood pulp division. The problems are many, and will increase in number. Many new developments in production and utilization will require more men of greater skill in the art. Men having general knowledge combined with intensive practical experience must be supplied.

The foregoing comments are made in connection with a few phases of the industry which seem to stand out in importance at the present time. Other phases need attention. With study and application of scientific principles, coupled with compounded experience, the future shall be bright and interesting and the ink a little blacker.

What I Do Not Know About Sizing and Capillary Flow*

By R. M. Cobb[1]

Abstract

This paper, written from the viewpoint that what is not known should be known, discusses briefly some of the vital but unknown factors in sizing:

Contact angles and the laws governing penetration and swelling by fluids.

The physical state and position of sizing materials in the fiber.

The raison d'être and effect of internal and surface sizing.

Basis of water, grease, moisture, and ink resistance.

Some test methods are suggested or reviewed.

Importance of Interfacial Considerations in Sizing

It has not been generally recognized that an accurate knowledge of the tension in the liquid-paper interface is a first condition for understanding the penetration of liquids into paper—and for understanding sizing, which offers the resistance to such liquid penetration. As Ferguson (*12*) points out, methods for the determination of these tensions are barely emerging from the primitive stage of development, and what we do not know about them far outweighs what is known. Indeed no less an authority than Sutermeister has stated, in an address on sizing at Holyoke, that what we do not know about sizing in general transcends all our definite information—and that any symposium on sizing must be "a symposium on ignorance".

It is the object of this paper to outline as sharply and clearly as possible this state of sizing knowledge, taking up the ignorance at the point where the sizing film is in place on the fibers, and the flow of fluid begins.

Flow into Capillaries

The equation for rate of flow into capillaries

$$l = \frac{r \sigma \cos \theta t}{2 \mu} \qquad (1)$$

where

l = depth of liquid penetration in cm.
r = paper pore radius in cm.
σ = surface tension of liquid in dynes/cm.
$\cos \theta$ = cosine of angle θ taken by liquid in contact with solid.
t = time of penetration in secs.
μ = coefficient of viscosity in poises. μ Water = .01006 poise at 20° C.

has been developed in exact or empirical form by Ostwald (*20*), Lucas (*18*), Washburn (*28*), Gouy (*16*), Nutting (*19*), Bell and Cameron (*7*); also discussed recently and notably by Simmonds (*25*), and by Peek and McLean (*21*). These authors have used it mostly with liquids of zero contact angle, to study liquid penetration.

Cobb and Lowe (*10*) last year discussed sizing from the viewpoint of the dynamics of capillary flow and applied this same equation as the key to what happens when penetration of liquids into paper is prevented—to what happens, in short, when paper is sized.

From consideration of the equation it is evident that sizing is effective because it lowers cos θ and/or r, the pore radius; and that sizing is highly specific for each liquid and test condition. A paper is not, strictly speaking "hard-sized"—but "hard-sized against water"—"against ink", etc. To all intents and purposes, a change in the test liquid or test conditions will affect the "sizing" of paper just as much as will treatment of the paper itself. There is another equation for liquid flow into capillaries

$$l = \frac{2 \sigma \cos \theta}{r d g}$$

where

d = density of liquid
g = gravity constant

which gives the equilibrium height l independent of time, and which must not be neglected because r is in the denominator instead of in the numerator. *Rate* attained varies *directly* as the $\sqrt[3]{}$pore radius, *height* attained varies *inversely* as pore radius.

Beater Sizing

Since beater sizing in ordinary amounts does not lower air porosity, I feel confident that in ordinary amounts beater sizing is effective only because it raises the contact angle of fiber surface against some liquids, such as water or writing ink. But I do not know how rosin and wax distribute themselves over the fibers to accomplish this. 2 per cent size distributed uniformly over an external surface of 0.2 square meter per gram of fiber would form a layer about 1,000 A U or 40 molecules thick. Even mono-molecular films can raise or lower contact angles appreciably. And so I believe that though there has been a tendency to dismiss this potential 40 molecule film as too thin to be worthy of consideration, it may exist and it may be the effective internal sizing agent.

On the other hand, if the sizing agent were deposited

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

[1] Member TAPPI. Chemist in charge of Research Laboratory, Lowe Paper Co., Ridgefield, N. J.

in the form of granules, it would also raise the contact angle of the paper against some liquids, by causing the liquids to arch from one granule to another.

I do not know what governs retention of sizing nor how rosin or wax arrange themselves as the per cent used increases. In other words, I do not know whether increasing amounts of sizing build up a thicker film on the fibers or simply cover more area than the lower percentages do.

Constitution of the Internal Sizing Film

I do not know whether it is a film of rosin or of aluminum resinate, basic, acid, neutral, or mixed, that does this raising of the contact angle. Any heavy metal soap can do it, as witness the waterproofing of raincoats or leather for shoe uppers, that become water-resistant without losing their air-porosity. Rosin can also raise contact angles. I believe the sizing film in paper is a mixture, but study of the contact angles of films of known composition, tested against water, may give one more important line of attack on this difficult problem.

Purpose of Beater Sizing

I do not know why paper is beater sized, where there is no question of water-resistance involved. According to Reed (*22*), rosin size facilitates the penetration of oil inks, and I do not know why papers destined for the press are beater sized at all, unless for reduction of softness and fuzziness. Weber and Cobb (*29*) discuss the effect of beater sizing on misregister, and state that a little sizing goes a great ways.

I do not know how much the presence of internal sizing reduces the linear response of paper to changes in relative humidity; and if such reduction is accompanied by necessary increase in conditioning time the total effect would seem to me to be a mixed blessing.

Internal sizing is effective against writing ink, but so is surface sizing and I do not know why either internal sizing or surface sizing would be preferred.

Internal sizing may have an effect on curl, but if so I do not know what it is, good or bad.

I do not know what degree of sizing is best for coating stock, though surely there must be an optimum, expressed in cc. vehicle absorbed per cm². in appropriate time.

Swelling of Fibers

I do not know how sizing affects the extent of swelling of fibers but I do know that the swelling of a paper sheet complicates the determination of l to be used in determining the dynamic contact angle. The equation for rate of swelling has been given by Simmonds (*25*) as a monomolecular reaction rate:

$$k = \frac{1}{t} \log \frac{a\delta}{(a\delta - a)} \qquad (2)$$

where

k = represents rate of swelling.
t = time in secs.
a = amount of liquid taken up at time t.
$a\delta$ = amount of liquid taken up at maximum swelling.

This equation shows that internal sizing will decrease the rate of swelling, because it will decrease a for every value of t. But I do not know how sizing will affect the value $a\delta$.

Sutermeister (*26*) presents Arnot's (*2*) observation that sized fibers are coated with minute granules. When mounted in glycerol unsized fibers swell rapidly and sized fibers slowly, while the granular coating does not swell at all.

Surface Sizing

In contrast to beater or internal sizing, surface sizing is usually done with materials such as glue or starch, that are not water-repellent, and so most surface sizing is better fitted to resist oil than water. Referring to the sizing equation it is evident that in contrast to beater sizing, such non-repellent materials can be effective against water only by reducing r, the pore size.

As shown by Cobb and Lowe (*10*), liquids do not tend to spread along the paper surface nearly so much as they tend to flow down into the pores, where no extension of surface is involved. For

$$W_S = W_P + S_L \qquad (3)$$

where

W_S = work of surface spreading
W_P = work of penetration
S_L = surface tension of liquid

Surface sizing against a small quantity of water, such as that carried on a pen, can therefore be successfully accomplished by materials that merely fill up the surface pores. Water-repellent materials can be used, but the task of waterproofing by surface sizing is complicated by the fact that the vapor of the test liquid usually lowers the contact angle of the fiber against the liquid, as well as opening up channels by swelling. Water-repellent surface films must be sufficiently thick and tight to prevent undue passage of water vapor into the fiber.

I do not know which of the common hydrophilic surface sizing agents is best, nor why, nor whether the coating has to be thick or just non-porous. I do not know how surface sizing films are built into the pores.

I do know that surface sizing with starch increases the sensitivity of lithographic papers to relative humidity; but as Sutermeister has pointed out, it compensates for that by laying the fuzz so that, with surface sizing, freer stock may be used.

Moisture Resistance

If water vapor flowed through paper as if it were an inert gas going through a single capillary tube, the rate of flow would be given by the equation presented by Barr (*5*):

$$V_o p_o = V_1 p_1 = \frac{\pi r^4 t}{16 \mu l} (P_o^2 - P_1^2) \qquad (4)$$

where

P_o P_1 = pressures in reservoirs at ends of tube
V_o = cc gas escaping per sec. from reservoir 0
V_1 = cc gas caught per sec. in reservoir 1
l = thickness of paper in cm.
μ = coefficient of viscosity in poises
t = time in secs.
π = 3.1416

This equation, as developed by Meyer, has been discussed in detail by Carson (*8*) (*9*).

Effect of Moisture Sorption

Since paper is permeable to moisture even when the rate of air flow is reduced to zero, the above equation does not govern moisture permeability below the zero air flow point and I do not know what does govern it. Fick's law

$$m = KA \frac{(P_1 - P_o)}{l} t \qquad (5)$$

where

m = amount diffused in 1 sec.
K = coefficient of diffusion
A = area under consideration
P_1 and P_o are water vapor pressures on two sides of paper
t = time
l = thickness of paper.

expresses, according to Herman *(13)* the amount of water vapor passing through a permeable medium. It does not, however, tell what determines the value for the coefficient of diffusion K; and K is the important unknown in moisture resistance.

I used to think that any material that gave a film non-porous to air, and adsorbed little if any water vapor would make paper moisture-tight. But Ingmanson and Vacca *(15)* have recently pointed out that while bitumens adsorb very little moisture they are permeable to water vapor; and they point out that a bitumen impregnation does not reduce the equilibrium moisture content of jute, though it does cut down the rate of water adsorption. If a material that cuts off all air flow and adsorbs no water still permits moisture permeability, we shall have to go with Langmuir *(17)* and Sheppard *(24)* to intermolecular and perhaps intra-molecular arrangements for an understanding of the basis of moisture resistance.

Grease and Oil Resistance

Since there are few if any substances that appreciably raise the contact angle of fiber against oily matter, to size against such materials, attention has generally been directed toward reducing porosity with oil-insoluble films or with beating.

I do not know to what limits porosity must be reduced to produce greaseproofing. Doughty *(11)* sets the limit of air transmission to be less than 1×10^{-6} cc/cm²/sec., under 1 cm water head, though the paper may have a solid fraction as low as 0.52. Carson *(9)* suggests the use of air transmission as a test for greaseproofing.

I do not understand the structure of a greaseproof paper containing only 52 per cent solids (not surface coated). 48 per cent pore space can provide a lot of channels thirsty for oil, but perhaps there is a tight sizing of slime filling up those channels.

Tests for Grease Resistance

Will air-porosity tests alone serve as criterion for grease-resistance? On comparing the equations for oil flow and for air flow, I have honest doubts.

OIL FLOW IN SINGLE CAPILLARY (Penetration)	AIR FLOW IN SINGLE CAPILLARY (Transpiration)
$V = \pi\sqrt{\frac{r^4 \cos\theta\, \sigma\, t}{2\mu}}$ (1A)	$V_1 = \frac{\pi r^4 t (p_0^2 - p_1^2)}{16 \mu l (p_1)}$ (4A)

Oil Flow varies as the 2.5th power of the pore radius.
Air Flow varies as the 4th power of the pore radius.
Oil Flow is dependent upon σ, cos θ, and μ of oil.
Air Flow is independent of σ, cos θ, and μ of oil.
Oil Flow embraces flow *into* an empty capillary which gradually fills up.
Air Flow embraces flow *through* an empty capillary.

In view of the possible variations in the vital factors σ, cos θ, and μ in oils, and the solvent action of oils on materials that may prevent air flow, I should certainly supplement air porosity tests by tests with the very same oils and greases to which the paper is to be subjected. Air porosity tests, are, however, a valuable check on the condition of a greaseproof sheet.

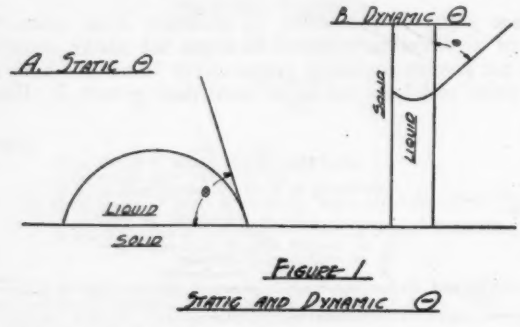


FIGURE 1
Static and Dynamic Θ

Test for Ink Resistance

Since the press deposits ink on paper in a film not over 10 μ thick, only part of which is vehicle, testing paper for ink resistance is a delicate problem.

Inks are as a rule too stiff and heavy to be used in the sizing test we described last year. Also, even when it is obvious that one paper is taking up more ink than another, the weight deposited per experimental sheet is so little that vital differences can not be detected gravimetrically.

There are indicator inks on the market that are supposed to change color or sheen when the vehicle has been absorbed by the paper, and thereby ink-receptivity comparisons can be made. I do not know how well they work in general, but I do know that it will not be safe to rely on them until more is known about them. What causes the color change and how much vehicle remains when the color change occurs? Is the color change independent of chemicals in the paper and dependent only upon sizing?

For ink resistance tests I should look for an absorbency test to be applied to the top .001 cm. of the sheet of paper.

I do not feel that reliance can be put on air-porosity tests as indication of ink-resistance under present knowledge, for the reason outlined under grease resistance and further, in this case, because the major obstruction to the flow of air may lie beneath the printing surface. The latter objection applies to liquid tests that go down through the 10 μ layer.

Effect of Paper on Ink Drying and Impression

The effect of papers on drying is bound up with the ink-receptivity; harder-sized papers retard drying because they prevent penetration of vehicle; and softer-sized papers retard drying because they lap up so much ink. I do not know how to test for this property except by actual trial under use conditions; or by closely duplicating use conditions on an experimental basis. The same goes for printability and smoothness—the best tests I know for these qualities are made on a press with 133-150 line screens.

Contact Angles

A great deal of interest seems to have been aroused by our reference to contact angles, and I have been asked to tell how they are measured. This is an embarrassing request in view of the remark of Bancroft *(4)* that those who believe in contact angles do not seem to have much success in measuring them.

It was pointed out to us by W. H. Herschel *(14)* that by use of a reference liquid of known contact angle (usually O) any unknown contact angle could be calculated from the equation, as

$$\cos\theta = \frac{2\mu P}{r\sigma t} \qquad (1B)$$

μ and σ of each liquid may be experimentally determined.

r and t are made constants by using the same fiber stock and testing for the same time. μ, σ, r, and t are then lumped together as constant K_1

Then

$$\frac{\cos\theta_1}{\cos\theta_2} = \frac{K_1 l_1^2}{K_1 l_2^2} \qquad (1C)$$

So that if l is measured by direct observation as described by Simmonds *(25)*, and by Peeks and McLean

(21), or calculated by the method of Cobb and Lowe (10), with a recourse to a reference liquid such as benzine, the value of cos θ may be obtained. Peeks and McLean (21) have substituted the term "penetration tension," and give their method for determining it in full detail. They point out the necessity of getting the contact angle under actual dynamic, working conditions, instead of getting a static value. (Figs. 1 and 2.) Gravimetric determinations are complicated by swelling, and by the fact that the capillaries do not always saturate.

I do not know how we can get a dynamic value for contact angles of heavy-bodied inks. For a thorough discussion of the method of determining the static values, which may be of some help here, reference may be made to Rideal (23) or Adam (1). An excellent method, as yet unpublished, has been described by Mack at the Geneva, N. Y. Agricultural Experiment Station. Baker (3) has also described a simple method, in which the wetting power varies inversely as the radius of a spreading drop.

Size and Shape of Capillaries

In considering ink resistance the size and shape of the pores are of interest. It has been pointed out to me that the size and shape of the so-called capillaries is most irregular and that liquids may not flow steadily into the pores, but flow by jerks and jumps. The work of Carson (8) (9), and of Peeks and McLean (21) has proven that flow into the pores follows the law of flow into capillaries, albeit one must consider the resistance as that of capillaries in series.

I do not know the diameter of paper capillaries but they have been estimated by Carson (2) to be 1-10μ; by Peeks and McLean (21) to be 8 to 80μ; and by Simmonds (25) to be .017-1.065μ.

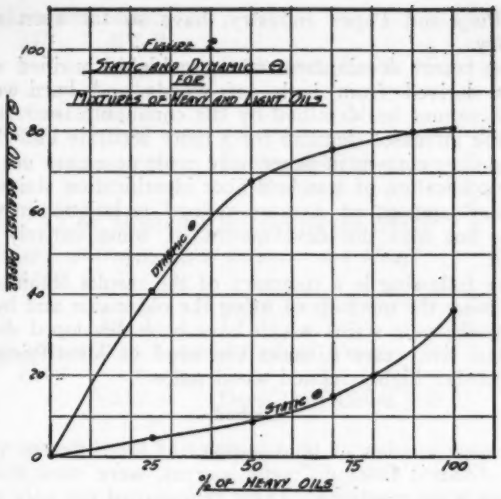
Summary

1. The theory of sizing, previously discussed and based on the equation for flow into capillaries, has been reviewed. It embraces the hypothesis that internal sizing raises the contact angle of some liquids against fiber; while surface sizing reduces the flow of liquids by closing the pores against them, and may also do so by raising the contact angle against them.

2. The dubious relationship of air porosity, and moisture, grease and ink resistance has been discussed.

3. Swelling, also pore space, has been briefly considered.

4. The difficulties of measuring ink receptivity and contact angles of inks and liquids against paper have been outlined.



Acknowledgment

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New Stains and Their Use for Fiber Identification*

By John H. Graff[1]

Abstract

This paper presents a comparative study of old and new stains, and shows how the new stains, namely the "C" stain and the "F" stain, not only differentiate between the coniferous fibers, bast and leaf fibers, and rag and hard-wood fibers, but also between the various classes of the coniferous and hard-wood fibers.

The identification of the different wood fibers is at present limited among most fiber analysts to the separation of groundwood, unbleached soft-wood kraft, unbleached and bleached soft-wood sulphite, soda, and rag; and the stains used for this purpose, as described in the Paper Testing Methods of the Technical Association of

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

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the Pulp and Paper Industry, have so far been satisfactory.

The recent development of more highly purified wood pulps derived from both soft-woods and hard-woods, which cannot be identified by the commonly used stains, and the increased demand for a more accurate knowledge of the fiber content in paper have made necessary not only the modification of standard fiber identification stains and the development of a more refined technique in using them, but also the development of some entirely new stains.

The following is a summary of the results obtained by improving the methods of using the old stains and by applying the new stains which have been developed during the last five years to meet the need of identifying the present-day highly refined wood pulps.

Method

A large number of pulp samples of the different varieties, obtained from different sources, were used for the various stain reactions. These represented not only pulps collected from Eastern and West Coast manufacturers in Canada and the United States, but also a large variety of European pulps. The microscopic color reactions for the various stains used were classified according to Ridgway's "Color Standards and Color Nomenclature" (A. Hoen and Company, Baltimore, Maryland, 1912), as will be seen in the accompanying tabulation.

Since every one of the old stains except the Herzberg has been modified and since the methods of using some of them have been changed, each of the stains has been given a letter identification mark to avoid confusion with the old method and each stain will be described in detail.

Standard Solutions for Iodine Stains

Iodine Solution for the Herzberg Stain:

To 12.5 cc. of distilled water, add 5.25 grams of dry potassium iodide and 0.25 gram of dry iodine.

Standard Iodine Solution for All Other Stains:

To 50 cc. of distilled water, add 0.9 grams of dry potassium iodide and 0.65 grams of dry iodine.

Zinc Chloride Solution:

1.80 sp. gr. at 28 deg. C. is made by adding about 100 cc. of distilled water to 200 grams of zinc chloride (fused sticks in sealed glass containers).

Calcium Chloride Solution:

1.36 sp. gr. at 28 deg. C. is made by adding about 100 grams of C. P. calcium chloride to 150 cc. of distilled water.

Magnesium Chloride Solution:

1.18 sp. gr. at 28 deg. C. is made by adding about 82 grams of magnesium chloride ($MgCl_2 + 6H_2O$) to 100 cc. of distilled water.

Aluminum Chloride Solution:

1.15 sp. gr. at 28 deg. C. is made by adding 40 grams of aluminum chloride ($AlCl_3.6H_2O$) to 100 cc. of distilled water.

Sodium Chloride Solution:

1.19 sp. gr. at 28 deg. C. is made by adding 36 grams of sodium chloride to 100 cc. of distilled water.

Stains

Herzberg Stain:

To 40 cc. of standard zinc chloride solution, add 12.5 cc. of iodine solution for Herzberg Stain, mix well, pour into a tall, narrow vessel and place in the dark. After 12 to 24 hours, when the precipitate has settled, pipette off the clear portion into a dark bottle, add a leaf of crystal iodine and keep in the dark when not in use.

"A" Stain (Modified Sutermeister Stain):

To 45 cc. of standard calcium chloride solution, add 5 cc. of standard iodine solution. Mix well, pour into a dark bottle, add a leaf of crystal iodine and keep in the dark when not in use.

"C" Stain:

To 20 cc. of standard aluminum chloride solution, 10 cc. of calcium chloride solution and 10 cc. of zinc chloride solution, add 12.5 cc. of standard iodine solution. Mix well, pour into a tall, narrow vessel and place in the dark. After 12 to 24 hours, when the precipitate has settled, pipette off the clear portion into a dark bottle, add a leaf of crystal iodine and keep in the dark when not in use.

"F" Stain:

To 20 cc. of standard aluminum chloride solution, 6.5 cc. of calcium chloride solution and 6.5 cc. of zinc chloride solution, add 14.5 cc. of standard iodine solution. Mix well, pour into a tall, narrow vessel and place in the dark. After 12 to 24 hours, pipette off the clear portion into a dark bottle, add a leaf of crystal iodine and keep in the dark when not in use.

"D" Stain (Modified Jenk's Stain):

To 30 cc. of standard magnesium chloride solution, add 13.2 cc. of standard iodine solution. Mix, pour into a dark bottle, add a leaf of crystal iodine and keep in a dark place.

"E" Stain:

To 30 cc. of standard sodium chloride solution, add 12 cc. of standard iodine solution. Mix, pour into a dark bottle, add a leaf of crystal iodine and keep in the dark.

NOTE: All of the standard solutions must be at their exact specific gravities and must be measured with graduated pipettes. Dark-colored glass-stoppered dropping bottles must be used for the stains, and they will then keep well for a considerable length of time.

Staining the Slide

Slides prepared according to the method described in the paper on "Factors Involved in the Accuracy of Fiber Analysis" are stained by putting two to three drops of the stain used on the fibers, covering with a cover glass in such a manner as to prevent air bubbles, allowing to stand for one minute, then draining on a piece of blotting or filter paper and placing the slide on the microscope.

Microscopic Color Reactions as Compared with Ridgway's "Color Standards and Color Nomenclature"

For those not familiar with Ridgway's "Color Standards and Color Nomenclature" the following explanations may be necessary:

The number and capital letters before the name of the color refer to the exact place in the spectrum of the pure color. For example, 51 BV-B means that this color lies in the Blue Violet-Blue part of the spectrum, while 1 Red means that this color is pure spectrum red.

The primes following the numbers indicate the degree to which the spectrum color is broken with neutral gray. One prime indicates that 32 per cent of neutral gray has been added to the spectrum color; two primes indicate that 58 per cent of neutral gray has been added, three primes 77 per cent, four primes 90 per cent and five primes 95.5 per cent.

The small letters from "a" to "g", when placed above the capital letters, indicate how much the particular color has been tinted by the addition of white; for example, "b" shows that 9.5 per cent of white has been added, "d" 22.5 per cent and "f" 45 per cent. The small letters from "h" to "n", when placed below the capital letters, indicate to what extent the particular color has been shaded by the addition of black; for example, "i" shows that 45 per cent

of black has been added, "k" 70.5 per cent and "m" 87.5 per cent.

The colors given in this table are very close to the microscopic color reactions obtained with the various stains on the different kinds of pulp fibers, but it must also be remembered that the microscopic colors vary somewhat according to the light reflected into the microscope. The colors given are those observed with a clear white, northern light when mirror and condenser have been properly centered. This point cannot be stressed too strongly.

The color reactions of any given type of pulp also depend upon the extent of the cooking, bleaching and other purification which the fiber has undergone. As a matter of fact, the individual fibers in a given sample of pulp differ in tint and shade, but the technologist who is thoroughly familiar with the morphological characteristics of the different fibers and who is an expert technician and a careful worker will, after some experience with the new types of refined pulps, be able to identify them in mixtures with other pulps.

When two or more colors are given for the same pulp or pulps, it means that the stain reactions for these pulps may vary from one to the other, evidently depending upon the treatment of the pulp.

When two or three color reactions for a pulp are marked with the prefixes "a", "b" or "c", it means that the particular stain gives all of these color reactions on one and the same pulp. Apparently, this is because the individual fibers in the pulp have not all responded equally to the chemical treatment or because some fibers in the pulp are more resistant to the treatment than others.

Ridgway's Color Identification of Fiber Stain Reactions

THE HERZBERG STAIN

Soft-Wood Unbleached Sulphite:
51'' BV-B (Dull Bluish Violet)

Soft-Wood Unbleached Kraft, Bleached Kraft and Refined Kraft:
53'' V-B (Dull Violet Blue)

Soft-Wood Bleached Sulphites and Alphas:
55'' B-V (Vanderpol's Violet)
57'' VB-V (Dull Bluish Violet)
59'' Violet (Hyssop Violet)

Unbleached Sisal:
55'' B-V
——
j (Very Dull Blue Violet)

Bleached Sisal:
59'' Violet (Hyssop Violet)

Rag:
71' V-RR
——
h (Dark Spinel Red)

Hard-Wood Unbleached, Bleached and Refined Kraft:
51'' BV-B
——
i (Deep Dull Bluish Violet)

Hard-Wood Bleached Sulphite:
53'' V-B
——
k (Dark Dull Violet Blue)

Hard-Wood Alphas:
57'' VB-V
——
k (Dark Dull Bluish Violet)
59'' Violet
——
i (Deep Hyssop Violet)

Unbleached Soda:
51'' BV-B
——
k (Dark Dull Bluish Violet)

Bleached Soda:
55'' B-V
——
k (Yvette Violet)

THE "A" OR MODIFIED SUTERMEISTER STAIN

Soft-Wood Unbleached Sulphite and Kraft:
65''' e
——
RR-V (Light Deep Vinaceous Lavender)

Soft-Wood Bleached and Refined Kraft:
61''' d
——
VR-V (Deep Dull Lavender)

Soft-Wood Bleached Sulphite:
65''' e
——
RR-V (Light Deep Vinaceous Lavender)
69''' c
——
RV-R (Light Vinaceous Lilac)
1''' b
——
Red (Purplish Vinaceous)

Soft-Wood Alphas:
69''' d
——
RV-R (Light Vinaceous Lilac)
7'' c
——
R-O (Light Congo Pink)
7'' d
——
R-O (Light Brown Grayish Vinaceous)

Unbleached and Bleached Sisal:
65''' d
——
RR-V (Deep Vinaceous Lavender)

Rag:
5' a
——
OO-R (Coral Red)

Hard-Wood Unbleached Kraft:
57''' VB-V
——
i (Slate Violet)

Hard-Wood Bleached Kraft:
65''' RR-V (Vinaceous Purple)

Hard-Wood Refined Kraft:
57''' VB-V (Ramier Blue)

Hard-Wood Bleached Sulphite:
57''' d
——
VB-V (Deep Grayish Lavender)

Hard-Wood Alphas:
1''' d
——
Red (Light Purplish Vinaceous)
3'' b
——
O-R (Light Corinthian Red)
69''' d
——
RV-R (Light Vinaceous Lilac)

Unbleached Soda:
61''' VR-V
k (Dark Slate Violet)

Bleached Soda:
61''' VR-V (Slate Violet)

THE "C" STAIN

Soft-Wood Unbleached Sulphite:
19'' f
YO-Y (Cartridge Buff)

Soft-Wood Unbleached Kraft:
(a) 25'''' d
YG-Y (Mineral Gray)
(b) 13'''' d
OY-O (Ecru Drab)

Soft-Wood Bleached Kraft:
(a) 53'''' f
V-B (Pale Violet Plumbeous)
(b) 37'''' f
GB-G (Glaucous Gray)

Soft-Wood Refined Kraft:
65''' d
RR-V (Deep Vinaceous Lavender)
69''' f
RV-R (Pale Vinaceous Lilac)

Soft-Wood Lightly Bleached Sulphite:
13''' f
OY-O (Pale Vinaceous Fawn)

Soft-Wood Eastern American and European Bleached Sulphite:
1'''' f
Red (Pallid Purple Drab)
69'''' g
RV-R (Very Light Vinaceous Gray)

Soft-Wood West Coast Bleached Sulphite:
1''' f
Red (Pale Purplish Vinaceous)

Soft-Wood Alphas:
3'' e
O-R (Light Corinthian Pink)
5'' e
OO-R (Light Pinkish Vinaceous)
6'' e
OO-R (Light Vinaceous Congo Pink)

Soft-Wood Unbleached Alpha:
17'' b
O-Y (Cinnamon Buff)

Soft-Wood Lightly Bleached Alpha:
65'' e
RR-V (Light Purplish Lilac)

Unbleached Sisal:
3' c
O-R (Very Light Jasper Red)

Bleached Sisal:
71'' d
V-RR (Rhodonite Pink)

Rag:
5' OO-R (Coral Red)

Hard-Wood Unbleached Kraft:
(a) 65''' b
RR-V (Light Vinaceous Purple)
(b) 45'' BG-B (Orient Blue)

Hard-Wood Bleached Kraft:
45'' b
BG-B (Alice Blue)

Hard-Wood Refined Kraft:
(a) 65''' d
RR-V (Deep Vinaceous Lavender)
(b) 45'' b
BG-B (Alice Blue)

Hard-Wood Bleached Sulphite:
51'' e
BV-B (Very Light Grayish Blue Violet)
(a) 49'' e
Blue (Very Pale Windsor Blue)
(b) 9''' f
OR-O (Pale Grayish Vinaceous)
1''' f
Red (Pale Purplish Vinaceous)

Hard-Wood Alphas:
5'' d
OO-R (Pinkish Vinaceous)
5'' OO-R (Etruscan Red)
6'' e
OO-R (Light Vinaceous Congo Pink)
1'' e
Red (Light Vinaceous)

Unbleached and Bleached Soda:
45''' d
BG-B (Russian Blue)

THE "F" STAIN

Soft-Wood Unbleached Sulphite:
19''' f
YO-Y (Pale Tilleul Olive Buff)
21'' e
O-YY (Light Colonial Buff)

Soft-Wood Unbleached Kraft:
(a) 17'' b
O-Y (Cinnamon Buff)

(b) 21''' b / O-YY (Deep Olive Buff)
(c) 13'''' f / OY-O (Pale Ecru Drab)

Soft-Wood Bleached Kraft:
19''''' d / YO-Y (Pale Mouse Olive Gray)
69'''' d / RV-R (Vinaceous Gray)

Soft-Wood Refined Kraft:
65'''' d / RR-V (Heliotrope Gray)
1''''' d / Red (Pale Quaker Drab)

Soft-Wood Bleached Sulphite:
9''' f / OR-O (Pale Grayish Vinaceous)
7''' f / R-O (Pale Brown Grayish Vinaceous)

Soft-Wood Alphas:
7'' d / R-O (Light Congo Pink)

Soft-Wood Unbleached Alpha:
12'' d / Orange (Buff Pink)

Soft-Wood Lightly Bleached Alpha:
69'''' e / RV-R (Light Vinaceous Gray)
1''' d / Red (Light Purplish Vinaceous)

Unbleached and Bleached Sisal:
1''' c / Red (Purplish Vinaceous)

Rag:
5'' b / OO-R (Orange Vinaceous)

Hard-Wood Unbleached Kraft:
41'''' b / BB-G (Medici Blue)
45'''' d / BG-B (Clear Green Blue Gray)

Hard-Wood Bleached Kraft:
67''''' d / V-R (Pale Purplish Gray)

Hard-Wood Refined Kraft:
53'''' d / V-B (Light Violet Plumbeous)
61'''' f / VR-V (Light Plumbago Gray)
49'''' d / Blue (Light Payne's Gray)
65'''' d / RR-V (Heliotrope Gray)

Hard-Wood Bleached Sulphite:
7''' e / R-O (Pale Light Brown Grayish Vinaceous)
9'''' d / OR-O (Pale Brownish Drab)

Hard-Wood Alphas:
5''' e / OO-R (Pale Light Brownish Vinaceous)
5''' OO-R (Deep Brownish Vinaceous)
6'' d / OO-R (Light Vinaceous Congo Pink)

Unbleached and Bleached Soda:
61'''' f / VR-V (Light Plumbago Gray)
61'''' b / VR-V (Deep Plumbago Gray)

THE "D" OR MODIFIED JENK'S STAIN

Hard-Wood Unbleached Kraft:
(a) 25''' d / YG-Y (Water Green)
(b) 1'' a / Red (Deep Vinaceous)

Hard-Wood Bleached and Refined Kraft:
3'' e / O-R (Light Corinthian Pink)
(a) 25'''' d / YG-Y (Mineral Gray)
(b) 1'' b / Red (Deep Vinaceous)

Hard-Wood Bleached Sulphite:
7'' e / R-O (Very Light Congo Pink)
11'' e / Orange (Light Buff Pink)

Hard-Wood Alphas:
7' d / R-O (Flesh Color)
7' R-O / i (Vinaceous Rufous)

Unbleached and Bleached Soda:
13''' d / OY-O (Light Vinaceous Fawn)
9''' d / OR-O (Light Grayish Vinaceous)

THE "E" STAIN

Hard-Wood Unbleached Kraft:

(a) 29′′′′ e / GG-Y (Light Gnaphalium Green)

(b) 1′′ Red (Dark Vinaceous)

Hard-Wood Bleached Kraft:

5′′′′ d / OO-R (Pale Vinaceous Drab)

Hard-Wood Refined Kraft:

1′′′ a / Red (Light Livid Brown)

1′′′′ c / Red (Pale Light Purple Drab)

1′′′′ Red (Purple Drab)

1′′′′ b / Red (Light Purple Drab)

Hard-Wood Bleached Sulphite:

13′′′ d / OY-O (Light Vinaceous Fawn)

5′′′ d / OO-R (Light Brownish Vinaceous)

5′′′′ d / OO-R (Pale Vinaceous Drab)

Hard-Wood Alphas:

1′′ c / Red (Light Deep Vinaceous)

1′′ a / Red (Dark Deep Vinaceous)

6′′ d / OO-R (Vinaceous Congo Pink)

5′′ b / OO-R (Orange Vinaceous)

Unbleached and Bleached Soda:

5′′′′ d / OO-R (Pale Vinaceous Drab)

From this table, it is of course difficult for one not familiar with colors, their purity, tint and shade, to get a clear conception of the actual microscopic color differences between the different kinds of pulp when treated with one or another of these stains. A color chart has therefore been prepared showing these color differences, but unfortunately it would be economically impossible to include such a chart in the publication of this paper.

It is very important for anyone attempting to use the new stains to be free from color-blindness, to be thoroughly trained in the fundamentals of microscopy and wood technology, and to have had some supervision in differentiating all the specially treated fibers with the new stains. Those who have already had the opportunity of becoming familiar with this new staining technique at the Institute of Paper Chemistry, Appleton, Wis., have found that all present-day pulp and paper fibers can be identified with either the "C" or the "F" stain.

If the color reactions given for the various types of fibers with the "C" and the "F" stains are compared, it will be seen that a very wide differentiation is obtained between the different types of fibers and that, although each reaction is satisfactory in itself, each also supplements the other. From the color atlas, it can easily be seen that the "C" stain not only differentiates between the coniferous fibers, bast and leaf fibers, and rag and hard-wood fibers, but also between the various classes of the coniferous and hard-wood fibers. The stain likewise gives very distinct color differentiation between unbleached, lightly bleached and fully bleached sulphites; between European and Eastern American bleached sulphites as against West Coast bleached sulphites; between unbleached, lightly bleached and bleached Alphas; and, finally, between kraft, semi-bleached kraft and refined krafts. Among the hard-wood fibers, the "C" stain differentiates between kraft, semi-bleached kraft, refined krafts, sulphites, Alphas and soda fibers. There may, however, be some difficulty in differentiating between the hard-wood bleached and refined krafts and the bleached and unbleached soda fibers with both the "C" and the "F" stains, but these fibers may be distinguished from one another by the use of either the "D" or Modified Jenk's Stain or the "E" stain, which is the only practical use these two last-mentioned stains have.

Inasmuch as the successful application of the new stains for the identification of various types of fibers depends upon their proper handling, the publication of the information described in this paper has been withheld until a comparatively large group of specially trained technicians have had an opportunity to use the stains in a practical way. The experience of these men indicates the value of the new stains, and for this reason the information in regard to the stains is being made available to the members of the Technical Association of the Pulp and Paper Industry. It cannot be emphasized too strongly, however, that the attainment of the full value of these staining methods can be expected only if the analyst has been supervised personally in their application by a technician thoroughly familiar with their use.

Relation of Paper Properties to Register in Offset Lithography

The National Bureau of Standards has tested out its recipe for the manufacture of wood-fiber lithographic paper, which minimizes misregister of color prints, with very satisfactory results. Through previous study, in both laboratory and printing plant, of commercial papers used for this purpose, it was found that most of the misregister troubles were caused by lengthwise expansion or contraction of the paper between printings. Noting that the least lengthwise change occurred when a large proportion of the fibres lay in that direction, the investigators evolved a way of manufacturing paper of maximum quality in this respect. Papers, made in accordance with the newly developed practice by three cooperating manufacturers, were subjected to experimental printings at the Coast and Geodetic Survey and improved register was obtained. A detailed report of this work has been published as bureau Research Paper No. 730, copies of which can be obtained from the Superintendent of Documents, Washington, D. C. for 5 cents (cash).

Paper for offset lithography must have the proper "grain" for the successful color printing. In cooperation with the Lithographic Technical Foundation, the Bureau is bringing to light much-needed information on how paper should be made for modern high-speed offset printing. In this type of printing, from two to twenty or more colors must fit with exactness one on top of another.

Lake States TAPPI Meets With A.C.S.

The Lake States Section of the Technical Association of the Pulp and Paper Industry met jointly with the Northeast Wisconsin Section of the American Chemical Society on Tuesday evening, April 9, 1935 at the Conway Hotel, Appleton, Wisconsin. There were about 175 present and A. T. Gardner of the Combined Locks Paper Company presided as Chairman.

Harry F. Lewis, Dean of the Institute of Paper Chemistry presented a report of the nominating committee of the A. C. S. Section.

E. R. Bridgewater Speaks

The speaker of the evening was E. R. Bridgewater of E. I. du Pont de Nemours and Company who talked on "Duprene and The Economics of Acetylene Polymers and Their Derivatives." Mr. Bridgewater pointed out that the commercial importance of mono-and di-vinyl acetyline and their derivatives has been recognized only in the past three years although the chemists Willstater and Worth had described such compounds as early as 1913.

The reactions of these compounds and the discovery of Duprene were described. Duprene is a product similar in appearance and properties to rubber but it does not swell when exposed to oils. It is inert and resists the diffisuion of gases through it.

Mr. Bridgewater presented an interesting sidelight on the economics relating to the marketing of a new competitive product which costs more to produce than an established product. Such a product may (1) be subsidized by the Government as is done for some products in Germany and France. (2) It may be protected by tariff or (3) it may possess outstanding properties which will command a high selling price. Duprene falls in the third class and is making good progress because of its inherent properties.

Allen Abrams of the Marathon Paper Mills and former President of the Technical Association was present and made a few well chosen remarks.

Those Who Attended

Those present included: A. G. Hofherr, Continental Paper and Bag Corporation, Marinette, Wis.; Herb Heilig, Vocational Education School, Appleton, Wis.; D. H. Beisel, Wadhams Oil Company, Milwaukee; F. A. Simmonds, Forest Products Laboratory, Madison, Wis.; H. L. Davis, Lawrence College, Appleton; W. A. Chilson, Forest Products Laboratory, Madison; M. A. Youtz, Northern Paper Mills, Green Bay, Wis,; C. L. Wagner, Marathon Paper Mills Company, Rothschild, Wis.; N. L. Malcove, Continental Paper and Bag Corporation, Marinette; R. M. Haddock, Escanaba Paper Company, Escanaba, Mich.; H. G. Lloyd, E. F. Houghton & Co., Chicago; Alfred Phillips, Consolidated Water Power and Paper Cmpany, Appleton; F. G. Sherman, E. F. Houghton & Co., Appleton; J. W. McIntyre, Institute of Paper Chemistry, Appleton; R. D. McCarron, Wisconsin River Paper and Pulp Company, Stevens Point, Wis.: W. J. Kerr, Security Rubber and Belting Company, Chicago; L. H. Reed, Escanaba Paper Company, Escanaba; L. B. Penhallow, Wadhams Oil Company, Appleton; R. M. Radsch, Appleton Machine Company, Appleton; W. C. Christensen, Hoberg Paper and Fibre Company, Green Bay, Wis.; G. F. Enderlein, Mosinee Paper Mills, Mosinee, Wis.; C. M. Green, Mosinee Paper Mills; Lawrence Lynd, R. T. Vanderbilt Company, New York, N. Y.; G. J. Van Liew, Wadhams Oil Company; Glenn Carroll, Combined Locks Paper Company, Appleton; H. T. Holbrook, Wadhams Oil Company; A. J. Detsie, Standard Oil Company, Green Bay; H. P. Madsen, Appleton Machine Company, Appleton; J. V. Wedgwood, Manhattan Rubber Company, Neenah; B. Cowan, Standard Oil Company; J. H. Flanagan, Standard Oil Company, Chicago; R. A. Farrell, Marathon Paper Mills, Rothschild; R. L. Youngson, same company; M. V. Molsberry, General Electric Company, Milwaukee; A. J. Hutchinson, Standard Oil Company of Indiana, Chicago; P. E. Bowman, West Virginia Pulp and Paper Company, Piedmont, Virginia; John Limpert, Kimberly-Clark Corporation, Neenah; S. L. Weller, Dupont Company; J. R. Fanselow, Kimberly-Clark Corporation; G. T. Latham, Du Pont Company; G. J. Brabender Marathon Paper Mills; F. W. Bentzen, Kimberly-Clark Corporation; W. F. Swan, Limestone Products Company, Menominee, Michigan; G. W. Forcey, Marathon Paper Mills; J. H. Graff, Institute of Paper Chemistry; E. M. Leavitt, Thilmany Pulp and Paper Company, Kaukauna, Wisconsin; W. A. Buchanan, Institute of Paper Chemistry; C. J. McMahon, Appleton Woolen Mills, Appleton; Charles Johnson, Institute of Paper Chemistry; B. F. Smith, Kimberly Clark Corporation; L. F. Jahnke, Wadhams Oil Company, Milwaukee; Russell Le Roux, Interlake Pulp & Paper Company, Appleton, C. C. Bleil, Du Pont Company, Chicago; S. D. Wells, Combined Locks Paper Company, Combined Locks, Wis.; A. T. Gardiner, same; E. R. Bridgewater, Dupont Company, Wilmington, Del.; Allen Abrams, Marathon Paper Mills, Rothschild; J. A. Turner, Du Pont Company, Chicago; S. F. Darling, Lawrence College, Appleton; A. P. Nonweiler, A. P. Nonweiler Company, Oshkosh, Wis.; A. W. Agrell, Patten Paper Company, Kaukauna, Wis.; A. F. Kletzien, Fox River Paper Company, Appleton; J. O. Frank, Morgan Company, Oshkosh; L. H. Gelmer, Independent Rubber Company, Chicago; J. E. O'Donnell same company; George Thompson, Gilbert Paper Company, Neenah; Harold Bialkowsky, same company; W. B. Giese, Hoberg Paper and Fibre Company, Green Bay; R. L. Shaw, W. A. Jones Foundry and Machine Company; C. A. Croxen, Wadhams Oil Company; R. C. Crain, Whiting-Plover Paper Company, Stevens Point; Jimm Foote, Fox River Paper Company, Appleton; L. E. Fitzgerald, Paper Makers Chemical Corporation, Kalamazoo; Joseph Roskams, Hoberg Paper and Fibre Company, Green Bay; Ward Harrison, Institute of Paper Chemistry; R. W. Holden, Stowe-Woodward Inc., Newton Upper Falls, Mass.; G. A. Hermann, Hermann Manufacturing Company, Lancaster, Ohio; E. R. Williams, Neenah Paper Company, Neenah; E. J. Vickman, Hoberg Paper and Fibre Company; J. E. Watson, Wisconsin Wire Works, Appleton, Wis.; L. V. Teesdale; E. P. Miller, Hoberg Paper and Fibre Company; M. D. Bell, Watab Paper Company, Sartell, Minn.; J. S. Mohr, Chromium Corporation of America, Milwaukee; R. W. Ludt, Kimberly-Clark Corporation; R. H. Kehl, same company; W. H. Swanson, same company; E. H. Voigtman, same company; Lloyd Lang, same company; F. J. Sensenbrenner, same company; R. L. Davis, Detroit Sulphite Pulp and Paper Company; L. A. Carpenter, Bergstrom Paper Company, Neenah; E. M. McCourt, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.; H. F. Lewis, Institute of Paper Chemistry; Howard Morgan, Institute of Paper Chemistry; W. H. Falatick, Thilmany Pulp and Paper Company, Kaukauna; R. J. Zaumeyer, Kimberly-Clark Corporation; A. E. Johnson, Continental Paper and Bag Corporation, Marinette; P. A. Paulson, Appleton; Harold Sinclair, Bennett Inc., Cambridge, Mass.

The Bauer Bros. Company Joins TAPPI

In connection with the general current interest exhibited in the pulp and paper industry regarding the development of stuff preparation equipment, it is interesting to note that the Bauer Brothers Company of Springfield, Ohio, has become a member of the Technical Association of the Pulp and Paper Industry.

The Bauer Brothers Company purchased in 1904 a business known as the Foos Manufacturing Company which had been established in 1878.

About ten years ago Bauer Brothers entered the pulp and paper field. At that time the company found that its machine, with some modification and changes, could successfully refine pulp wood and other fibrous materials.

To serve the paper industry in the most effective way Bauer Bros. established a laboratory in which full size commercial machines were installed. These machines came from various well established manufacturers, who were favorably known in the pulp and paper industry. This laboratory, although proving to require a heavy investment, has been considered worth while and has proven itself of value both to Bauer Bros. and to the paper industry which it is serving. It may almost be said that a number of industrial plants now existing went through their semi-plant scale development in the Bauer laboratory. The laboratory is of such value to Bauer Bros. clients that it is in nearly constant use by both large and small companies interested in pulping or refining.

More than one hundred Bauer machines are installed and giving satisfactory service in the United States, Canada, Hawaiian Islands and Sweden. Users of these machines are not considered to be customers, but rather as clients, this being the relationship that has existed for several years between Bauer Bros. and the industries served.

A Paper Machine for Stock Samples

Because time is such a big factor in the manufacture of paper, the practical papermaker often works at a disadvantage. Should he wish to check consistency, freeness, Mullen or any variance that might affect the finished sheet, the delay caused by present laboratory equipment defeats him.

The chemist usually requires considerable time for his laboratory tests and, regardless of his conclusions, the papermaker is usually unable to make use of them on that particular run of paper. But the Noble & Wood sheet machine turns out a sheet and gives the answer so quickly the papermaker can correct the fault before the stock leaves the beater. It is only a matter of ten minutes. In that time a quart sample of stock can be run through the sheet machine and a test made on a bone dry sample sheet.

This machine is completely described in a booklet which has just been issued by the Noble & Wood Machine Company, of Hoosick Falls, N. Y., and may be obtained free on application to the company.

No Immediate Action on Pulpwood Code

WASHINGTON, D. C., April 17, 1935—It will probably be some time before any final action is taken at NRA in connection with the pulpwood code which has been bandied back and forth for months now in spite of everything that has been done by the NRA Paper Division to push it through to its final conclusion.

NRA officials now state definitely that nothing more will be done with the pulpwood code until the lumber code is finally settled. This is likely to be some time off.

TAPPI Notes

Norman Clark, formerly of Louis De Jonge Company, Staten Island, N. Y. is now in the Research Department of the Michigan Paper Company, Plainwell, Mich.

Nathan R. Pike, formerly of the Brown Company, Berlin, N. H., is now with the Nulomoline Company, New York.

George D. Bearce, formerly general manager of the International Paper Company, Dalhousie, N. B., is now general manager of the Maine Seaboard Paper Company, Bucksport, Maine.

Leslie Cleminson, formerly chemist at the Smooth Rock Falls, Ontario, mill of the Abitibi Power and Paper Company, is now resident manager of that mill.

Everett B. Ingalls, formerly manager of the International Paper Company, Palmer, N. Y. is now with the S. D. Warren Company, Cumberland Mills, Maine.

R. L. Davis, who has been with the Consolidated Water Power & Paper Company, is now with the Detroit Sulphite Pulp and Paper Company, Detroit, Mich.

Printers and Paper Men to Meet at Middletown

Members of the Technical Association of the Pulp and Paper Industry and of the Ben Franklin Typothetae will meet at the Manchester Hotel, Middletown, Ohio, Saturday, April 20, 1935. Dinner will be served at 6:30 P. M. and the meeting will follow at 8:00 P. M.

George C. Munro of the Champion Coated Paper Company and formerly of the Institute of Paper Chemistry, Appleton, Wis., will discuss the Brightness Tester recently developed for grading printing papers.

Robert F. Reed, Director of the Lithographic Technical Foundation, University of Cincinnati, Ohio, will talk on "Lithography and Paper."

A large delegation from the Ben Franklin Typothetae is expected to be present and a valuable discussion of the problem of printing papers will be discussed in an open forum on the subject.

Anyone interested in attending will be welcome either to the dinner or to the meeting which will follow.

Gilbert Paper Company Joins TAPPI

The Gilbert Paper Company of Menasha, Wis., has become a corporate member of the Technical Association of the Pulp and Paper Industry.

The Gilbert Paper Company is one of the most progressive in the Middle West and manufactures 30 tons daily of rag content bonds, ledgers, index bristols, flat writing, uncoated blueprints, manuscript cover, onion skin, map, chart, detail and safety papers.

The mill at Menasha is equipped with one 86 inch, one 102 inch and one 120 inch fourdriniers together with supercalenders.

The Gilbert Paper Company will be represented in the Technical Association by A. C. Gilbert, president.

W. F. Vallely Goes with Baldwin Paper Co.

The Baldwin Paper Company, 233-245 Spring street at Varick, New York, announces that W. F. Vallely, for twelve years with Thomas Barrett and Son, is now associated with them as vice president in charge of sales. The announcement states "Mr. Vallely's long and successful experience covers all phases of paper making from 'Tree to Trade,' and his services are now available to our customers and prospective customers in the consideration of their paper problems."

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 13, 1935

CIGARETTE PAPER

Champagne Paper Corp., Ile de France, Havre, 547 cs.; Liggett & Myers Tobacco Co., Ile de France, Havre, 22 cs.; Standard Products Corp., Ile de France, Havre, 53 cs.

WALL PAPER

———, Norfolk Maru, Kobe, 8 cs.; F. J. Emmerich, Scythia, Liverpool, 2 bls.

NEWSPRINT

Brooklyn Daily Times, Malaren, Norrkoeping, 356 rolls; Gilman Paper Co., Malaren, Norrkoeping, 154 rolls; Jay Madden Corp., Malaren, Hango, 612 rolls; Parsons & Whittemore, Inc., Malaren, Gothenburg, 60 rolls; G. J. Fijux, Cliffwood, Helsingfors, 100 rolls; Jay Madden Corp., Cliffwood, Helsingfors, 152 rolls.

PRINTING PAPER

Ozalid Corp., Statendam, Rotterdam, 1 cs.; International F'd'g. Co., J. Jadot, Antwerp, 7 cs.; Oxford University Press, Scythia, Liverpool, 8 cs.

WRAPPING PAPER

Steiner Paper Corp., Statendam, Rotterdam, 112 bls.; Scharf Bros., Statendam, Rotterdam, 10 cs.; Walker Goulard Plehn Co., Malaren, Hango, 189 rolls; Guaranty Trust Co., Malaren, Gothenburg, 1162 rolls, 45 bls.

PACKING PAPER

Chas. Happel, Statendam, Rotterdam, 2 cs.

COLORED PAPER

———, Statendam, Rotterdam, 2 cs.; Borden Riley Paper Co., Birkenau, Antwerp, 4 cs.; Levi Sondheimer, Majestic, Southampton, 1 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Farmer, London, 4 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., American Farmer, London, 15 cs.; Eastman Kodak Co., American Farmer, London, 1 cs.; J. Manheimer, Majestic, Southampton, 78 bls., 1 cs.; H. Reeve Angel & Co. Inc., Majestic, Southampton, 20 bls., 1 cs.

SURFACE COATED PAPER

P. Puttman, Westernland, Antwerp, 5 cs.; Gevaert Co. of America, Westernland, Antwerp, 44 cs.; Gevaert Co. of America, Birkenau, Antwerp, 50 cs.

BASIC PAPER

P. Puttman, Birkenau, Antwerp, 20 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Scythia, Liverpool, 11 cs., (duplex).

TISSUE PAPER

Jay Madden Corp., Cliffwood, Helsingfors, 28 bbl., 1 cs.; ———, Pr. Monroe, Marseilles, 1 cs.

CARD BOARD

J. P. Heffernan Paper Co., J. Jadot, Antwerp, 6 cs.

MISCELLANEOUS PAPER

Coty Processing Co., Ile de France, Havre, 2 cs.; E. H. Sargent & Co., Malaren, Gothenburg, 2 cs.; ———, Hokkai Maru, Osaka, 26 cs.; H. Reeve Angel & Co. Inc., Hokkai Maru, Yokohama, 6 cs.

RAGS BAGGINGS, ETC.

———, Statendam, Rotterdam, 118 bls. rags; ———, Statendam, Rotterdam, 149 bls. bagging; Chase National Bank, Transylvania, Glasgow, 22 bls. rags; ———, Transylvania, Glasgow, 48 bls. rags; Continental Bank Trust Co., Estrella, Barcelona, 107 bls. tares; Continental Bank Trust Co., Estrella, Barcelona, 149 bls. rags; Continental Bank Trust Co., Estrella, Barcelona, 116 bls. bagging; Chase National Bank, Estrella, Barcelona, 82 bls. bagging; Bank of N. Y. Trust Co., Estrella, Barcelona, 423 bls. rags; E. J. Keller Co. Inc., Estrella, ———, 543 bls. rags; E. J. Keller Co. Inc., American Farmer, ———, 102 bls. paper stock; ———, Oriente, Havana, 33 bls. rags; Darmstadt Scott & Courtney, Pr. Monroe, Alexandria, 73 bls. bagging; E. J. Keller Co. Inc., Pr. Monroe, ———, 126 bls. rags; E. J. Keller Co. Inc., Black Eagle, ———, 30 bls. bagging; F. J. Fawcett, Black Eagle, Antwerp, 9 bls. flax waste; Darmstadt Scott & Courtney, Black Eagle, 141 bls. jute waste.

OLD ROPE

Banco Coml. Italiane Trust Co., American Farmer, London, 56 coils; Continental Bank Trust Co., Estrella, Barcelona, 180 bls.

CHINA CLAY

English China Clays Sales Corp., Scythia, Liverpool, 140 bags.

WOOD PULP

Castle & Overton, Inc., Malaren, Hango, 658 bls. sulphite; Lagerloef Trading Co., Malaren, Hango, 260 bls. mechanical pulp; Lagerloef Trading Co., Malaren, Hango, 1230 bls. sulphite; Price & Pierce, Ltd., Malaren, Gothenburg, 325 bls. wood pulp; Price & Pierce, Ltd., Malaren, Gothenburg, 175 bls. sulphite; Perkins Goodwin & Co., Malaren, Gothenburg, 538 bls. sulphate; J. Andersen & Co., Malaren, Gothenburg, 375 bls. sulphite; Johaneson Wales & Sparre, Inc., Malaren, Gothenburg, 275 bls. sulphite; M. Sone, Cliffwood, Helsingfors, 300 bls. wood

pulp, 50 tons; M. Sone, City of Fairbury, Helsingfors, 750 bls. wood pulp.

WOOD PULP BOARDS

Lagerloef Trading Co., Cliffwood, Helsingfors, 60 rolls, 21 tons.

BOSTON IMPORTS

WEEK ENDING APRIL 13, 1935

Stone & Downer Co., Scythia, Liverpool, 43 cs. paper; ———, Scythia, Liverpool, 344 bags hide cuttings; G. F. Malcolm, Inc., Scythia, Liverpool, 4 cs. tissue paper; F. J. Fawcett, Black Eagle, Antwerp, 87 bls. flax waste; True & McClelland, Black Eagle, Antwerp, 88 bls. flax waste; ——— Black Eagle, Antwerp, 25 bls. rags; Royal Manfg. Co., Black Eagle, Antwerp, 203 bls. cotton waste; International Purchasing Co., Black Eagle, Antwerp, 54 coils old rope; J. W. Higman Co. Inc., Ravnanger, Fowey, 82 tons, 15 cwt. china clay; Paper Makers Importing Co., Ravnanger, Fowey, 665 tons, 5 cwt. china clay; Atterbury Bros. Inc., Zouave, Buenos Ayres, 417 bags casein; ———, Zouave, Buenos Ayres, 417 bags casein; English China Clays Sales Corp., Blink, Fowey, 1537 tons, 15 cwt. china clay; English China Clays Sales Corp., Blink, Fowey, 30 casks, 1285 bags china clay; M. Sone, Capulin, Hamburg, 322 bls. wood pulp; Gottesman & Co. Inc., Capulin Czecho-Slovakia, 2581 bls. wood pulp; Gottesman & Co. Inc., Eros, Sweden, 3660 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 13, 1935

Castle & Overton, Inc., Paraguayo, Buenos Ayres, 67 bls. rags; Castle & Overton, Inc., Malaren, Hango, 1706 bls. sulphite; J. W. Hampton Jr. & Co., Malaren, Hango, 59 rolls newsprint; Lagerloef Trading Co., Malaren, Hango, 1724 bls. sulphite; Phila. Enquirer, Malaren, Hallstavik, 567 rolls newsprint; Gilman Paper Co., Malaren, Norrkoeping, 417 rolls newsprint; M. Sone, Malaren, Norrkoeping, 60 bls. wood pulp; M. Sone, Malaren, Gothenburg, 2300 bls. wood pulp; Gottesman & Co. Inc., Malaren, Gothenburg, 320 bls. wood pulp; Parsons & Whittemore, Inc., Malaren, Gothenburg, 5 rolls newsprint; R. Blank, Black Eagle, Antwerp, 50 bls. rags; J. M. Hagy Waste Works, Getsuyo Maru, Kobe, 102 bls. rags; E. W. Twitchell, Cliffwood, Helsingfors, 285 rolls wrapping paper; M. Sone, Quaker City, Hamburg, 320 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING APRIL 13, 1935

M. Sone, City of Newport News, Hamburg, 325 bls. wood pulp; M. Sone, City of Havre, Hamburg, 500 bls. wood pulp; Gottesman & Co. Inc., City of Newport News, Czecho-Slovakia, 645 bls. wood pulp; Gottesman & Co. Inc.,.Wanja, Sweden, 4000 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING APRIL 13, 1935

Gottesman & Co. Inc., City of Havre, Sweden, 470 bls. wood pulp.

Harry Frost Now with Sinclair

Harry Frost, well known through his sales work with paper mills, has recently become identified with the sales of the Sinclair Company products.

Container Makes Favorable Report

Container Corporation of America reports consolidated net income of $207,810 for the first quarter of 1935, after interest, depreciation, federal income tax and adequate reserve for year-end adjustments. This compares with a net profit of $291,690 for the first quarter of 1934. Reserve for depreciation taken in 1935 quarter was $37,000 higher than in the similar 1934 quarter.

After deduction of $21,115.50 preferred dividend requirements for the three months, the earnings are 28 cents per share on the class A and 14 cents per share on the B common stocks.

Walter P. Paepcke, president, in announcing the earnings, stated:

"As previously mentioned, profit for the month of February was almost completely wiped out by the strike at our Philadelphia plant. On the other hand, March earnings, adjusted to former basis for reserves, depreciation, etc., were the best since October 1927. The corporation, however, controls more properties now than in former years.

"Net sales in the first quarter, in spite of the strike, were 27 per cent larger than last year in units and 9 per cent larger in dollar volume. Selling prices were somewhat lower and labor costs considerably higher than a year ago.

"Working capital, after payment of the preferred dividend and capital expenditures, shows an increase of over $40,000 since the first of this year.

"The immediate outlook, always dependent upon general business conditions, is reasonably fair. The paper board industry, including our company, has thus far in April operated at a reduced rate of activity. While this penalizes costs it has resulted in a better balance of supply and demand, and is checking the rather consistent though gradual downward trend of selling prices.

"The large improvement program of last year, which extended into the first two months of this year, has been completed; and with much lower capital expenditures from now on, there should be an improvement of working capital and cash position, assuming reasonably satisfactory earnings."

"Hand Made" Paper in America

J. Barcham Green & Son, Halye Mill, Maidstone, Kent, England, write as follows:

"It has been drawn to our attention that the issue of THE PAPER TRADE JOURNAL of January 10, you published a note headed: 'Simulates Hand-Made Paper' and we would point out that there are only two kinds of paper—hand made and machine made.

"Machine made paper is made to imitate hand made, but to say that this particular paper is 'what is in effect a hand-made paper' is simply misleading. It is not a hand made paper, although we have not seen a sheet of it.

"It is also misleading to say that 'it is almost exactly like the hand made paper.' Either it is the same as hand made or it is different.

"We think that the note you have published might possibly be liable to mislead the public. Perhaps you would be so kind as to modify them slightly in a subsequent issue?"

Approved Pulp Testing Chemist

The Joint Committee on Approved Pulp Testing Chemists for the Paper Industry, 122 East 42 street, New York, announces that Will J. Burke, 206 Pine street, Holyoke, Mass., has been accepted by the Committee as an approved pulp testing chemist, and is listed as such effective April 11, 1935.

1864 1935

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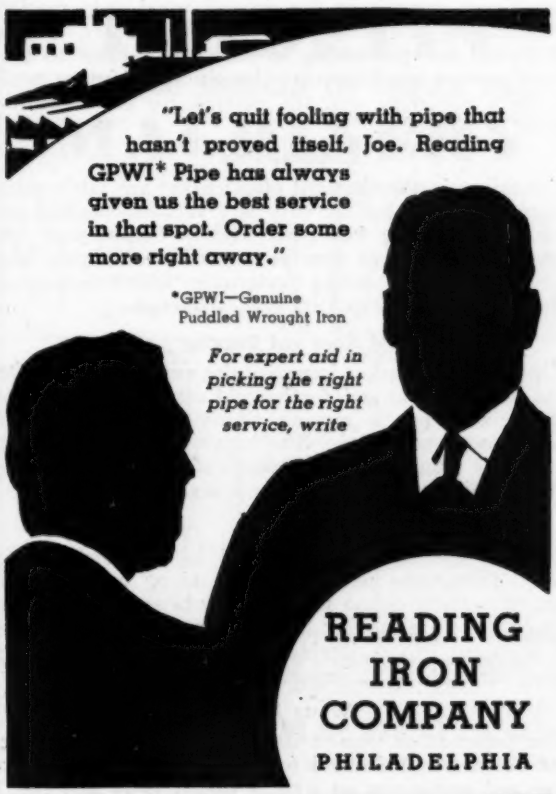

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 17, 1935.

Demand for the various standard grades of paper was moderately active during the past week. Supplies are moving into consumption in fairly satisfactory volume. Sentiment in the sales forces of the leading paper organizations continues optimistic. In most instances prices are holding to previously quoted levels.

Information gathered by the News Print Service Bureau shows that production during March fell off slightly compared with the corresponding month a year ago. The total North American newsprint output during the month amounted to 309,569 tons. Total production in March, 1934 was 320,914 tons.

The position of the fine paper market is practically unchanged. Demand for book, cover, writing and bond papers is fairly persistent. Prices remain steady. Tissues are moving freely. The coarse paper market is rather quiet at present. With improved weather, however, trading should become more lively.

Mechanical Pulp

Steadiness prevails in the ground wood pulp market. Manufacturing operations in the United States, Canada and abroad are proceeding in sufficient volume to take care of current requirements. Inquiries for future needs are fairly numerous and the outlook for the next few months is promising.

Chemical Pulp

Conditions in the chemical pulp market are fairly satisfactory. Demand for the various grades of bleached and unbleached sulphite has been slightly better since the recently revised prices were announced. Kraft pulp continues to exhibit a strong undertone, with offerings of both domestic and imported grades limited.

Old Rope and Bagging

The old rope market is practically marking time. Demand for domestic and foreign old manila rope is light. Small mixed rope is moving slowly. Old rope prices, however, are unchanged. The bagging market is irregular. While gunny bagging is fairly steady, scrap bagging is rather quiet. Roofing bagging is seasonally active.

Rags

Most of the business transacted in the domestic rag market during the past week was along routine lines. Demand for new cotton rags is fairly brisk. No. 1 white shirt cuttings are moving in fairly good volume and are still arousing export interest. Roofing grades are displaying strength. The imported rag market is dull.

Waste Paper

The paper stock market is showing signs of improvement. Board mill demand for the lower grades is more active and quotations on strictly folded news and No. 1 mixed paper are firmer. The higher grades of waste paper continue to display strength. No. 1 hard white envelope cuttings and hard and soft white shavings are steady.

Twine

Business in local twine circles is well sustained, thanks mainly to the continued request for the various varieties of twine for Easter requirements. Confidence is expressed by most observers in the future trend of the market. The price situation is practically unchanged.

Improve Tarentum Paper Mills

The Tarentum Paper Mills, manufacturers of rope, jute, kraft, and colored specialties, and rope and kraft bags, are engaged in a plant modernization program involving an expenditure of approximately $75,000. Construction work has been started in connection with boiler room improvements involving the addition of a 60,000 pound per hour steam generating, chain grate, stoker fired unit to be installed by the Combustion Engineering Company, Inc. of New York City, and an integral heater and water treatment plant, to be furnished by the Cochrane Corporation of Philadelphia.

E. M. Love is President, and R. B. Livermore is general manager, of the Tarentum Paper Mills. Peter F. Loftus, Consulting Engineers, Oliver Building, Pittsburgh, Pa., are the engineers in charge.

To Hear Paper Amendments May 10

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 16, 1935—At an NRA hearing to be held here May 10 in connection with an amendment to the paper code, provisions are included for quality standards. Another amendment would allow agreement between the Paper Code Authority and other code authorities on jurisdictional overlap to become binding following NRA approval. At the same time officials will hear an argument in connection with the establishment of an independent code for paper napkins and vegetable parchment as well as corrections to the paper code.

Walker Goulard Plehn Dine

To show their appreciation of the splendid spirit of cooperation existing between them, the employees of the Walker Goulard Plehn Company tendered a dinner dance to the officers of their company, in the Colonial Room of the Park Central Hotel, New York, on the evening of April 6, 1935. After an excellent meal and entertainment, the whole party numbering 75 danced until the early hours of the morning at which time the party broke up leaving everyone filled with a spirit of comradeship which is so essential to every successful business enterprise, especially in these days when labor and capital seem to be at dagger's point throughout the nation.

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On the Subject of KICKS

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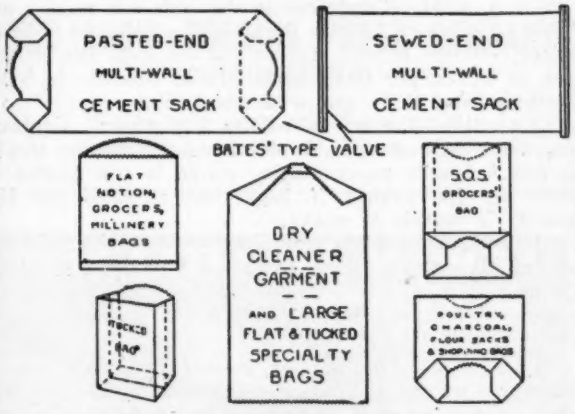

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 17, 1935.

BLANC FIXE.—Steadiness prevails in the blanc fixe market. Prices are holding to previously quoted levels. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market is only moderately active. Contract shipments are moving slowly. February imports totalled 199,820 pounds, valued at $7,553. Prices continue steady and unchanged and reports of shading are infrequent.

CASEIN.—The casein market is steady. Domestic standard ground is quoted at 12½ and finely ground at 13; Argentine standard ground at 13 and finely ground at 13¼; French standard ground at 13¼ and finely ground at 13½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is light at present. The contract movement is normal for the season. Solid caustic soda is still quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is practically unchanged. Prices are generally holding to schedule. Imported china clay is quoted at from $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE.—Some improvement is noticed in the chlorine market. Demand from the paper mills is persistent. Prices are steady to firm. Chlorine is quoted at from $2 to $2.40 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is fairly active. Paper making gum rosin is quoted at $4.45 and wood rosin at $4.25 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.58 per 100 pounds, in tank cars, at works.

SALT CAKE.—The salt cake market is practically marking time. Prices are holding to schedule. Salt cake is quoted at from $12 to $13 and chrome salt cake at from $11 to $12 per ton, at works. Imported salt cake is selling at from $12 to $13 per ton, on dock.

SODA ASH.—Conditions in the soda ash market are fairly satisfactory. While the prevailing demand is light, prices continue steady. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—The starch market is stronger. Contract shipments are moving in good volume. Prices are steady to firm. Special paper making starch is still quoted at $3.57 per 100 pounds, in bags; and at $3.84 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Demand for sulphate of alumina is fairly brisk. Prices are holding to schedule. Commercial grades are quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the talc market is routine. The price situation is unchanged. Domestic talc is still quoted at from $16 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	4.00	@	4.50
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.50	@	3.50
Glassine—			
Bleached	.11	@	—
Unbleached	.09	@	—

(The following Quotations are Delivered New York)

News per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	40.00	@	45.00
Chip	37.50	@	40.00
Sgl. Mla. Ll. Chip	45.00	@	47.50
Jute Lined Chip	45.00	@	47.50
White Patent Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	21.00	@	22.00
Dry	21.00	@	22.00
(F.o.b. Mill)			
No. 1 Domestic and Canadian	18.00	@	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	—*
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher Than Standard	2.00	@	—*
Class 3, Standard	1.95	@	—*
Class 4. Lower than Standard	1.90	@	—
(On Dock, Atlantic Ports)			
Kraft No. 1	1.70	@	1.80
Kraft No. 2	1.50	@	1.60
(F.o.b. Pulp Mill)			
Kraft Domestic	1.70	@	2.35
(Delivered)			
Soda Bleached	2.50	@	—

*Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	5.75	@	6.00
Silesias No. 1	3.75	@	4.00
New Unbleached	6.25	@	6.50
New Soft Blacks	3.00	@	3.25
Blue Overall	3.50	@	3.75
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	1.20	@	1.30
No. 2	1.10	@	1.15
No. 3	.95	@	1.00
No. 4	.95	@	1.00
No. 5A	.80	@	.85

Foreign Rags

New Rags

New Dark Cuttings	1.75	@	1.85
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	3.75	@	4.00
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.56	@	6.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.75	@	1.85
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.30	@	1.40
Linsey Garments	1.50	@	1.65
Dark Cottons	1.15	@	1.25
Old Shopperies	1.00	@	1.05
New Shopperies	.95	@	1.05
French Blues	1.70	@	1.80

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.40	@	1.50
Wool Tares, light	1.40	@	1.50
Wool Tares, heavy	1.50	@	1.60
Bright Bagging	1.40	@	1.50
Manila Rope			
Foreign	1.85	@	2.00
Domestic	1.75	@	2.00
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.60	@	2.70
Ordinary Hard White No. 1	2.10	@	2.15
Hard White No. 2	1.90	@	2.00
Soft White No. 1	1.70	@	1.80
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag.	.65	@	.75
Solid Flat Book	.45	@	.50
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	1.00	@	1.10
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.30
News—			
No. 1 White News	1.20	@	1.30
Strictly Overissue	.60	@	.65
Strictly Folded	.25	@	.30
No. 1 Mixed Paper	.15	@	.30

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Bruntkowa, Czecho-Slovakia
SVANÖ AKTIEBOLAG
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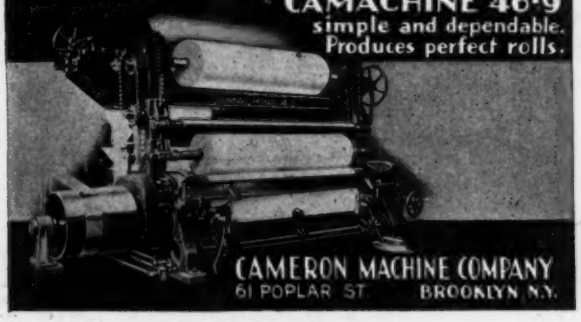

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Twines
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Coarse Polished—			
India	.11¼	@	.13¼
Belg. White Hemp	.12¼	@	.15½
India Compress	.11¼	@	.12¼
Fine Polished—			
Fine India	.18½	@	.20½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.12	@	.30
Water Marked Sulphite Bond	.06¼	@	.11
Sulphite Bond	.05½	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¼
No. 1 Fibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03½
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	48.50
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent coated	65.00	@	—

Container Lined—

85 Test, per 1000 sq. ft.	1.70		
100 Test, per 1000 sq. ft.	1.85		

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
Mixed Papers—			
No. 1	.15	@	.20
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(Delivered Philadelphia)

Bonds	.05-9/10	@	.18
Ledgers	.06 9/10	@	.40
Writings—			
Fine No. 3	.05	@	.06
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Book, M. F.	.05¼	@	.06¼
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¼	@	.08½
Label	.07	@	.11
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
Common Bogus	.03	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	$2.25	@	$4.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.40	@	1.75
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.03
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
New Dark Seconds	1.50	@	1.75

Khaki Cuttings—			
No. 1 O.D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.30
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.35	@	1.40
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.00	@	—
No. 1 Mixed Paper	.20	@	—
Straw Board Chip	.20	@	—
Binders Board Chip	.20	@	—
Corrugated Board	.40	@	—
Overissue News	.50	@	—
Old Newspapers	.30	@	—

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.07¼	@	.11
Rag Content	.12	@	.30
All Rag	.56	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06¼
Manila, Sul. No. 2	.03¼	@	.04½
No. 1 Kraft	.04¼	@	.05
No. 2 Kraft	.04¼	@	.04½
(F. o. b. Boston)			
Southern Kraft	.03½	@	.04½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print Rolls	39.50	@	—
Straw Board, rolls.009	—	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Chip Board (Creasing)	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.75	@	—
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.95	@	1.05
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.60	@	.65
White Blank News	1.15	@	1.20
No. 1 Kraft	.95	@	1.00
Mixed Papers	.17½	@	.20
Print Manila	.40	@	.45
Container Manilas	.25	@	—
Overissue News	.45	@	.50
Old Newspapers	—	@	.27½
Box Board Chips	..	@	.25
Corrugated boxes	.35	@	.40
Screening Wrappers	.40	@	.45

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	1.70	@	1.80
Domestic	1.90	@	2.00
Transmission Rope	.90	@	1.00
Mixed Strings	.30	@	.35
Jute Rope	1.35	@	1.40
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.25	@	1.35
Bleachery Burlap	4.00	@	4.50
Scrap Burlap	1.05	@	1.15
Scrap Sisal	1.00	@	1.10
Scrap Sisal for Shredding	1.10	@	1.25
Wool Tares, heavy	1.25	@	1.30
New Burlap Cuttings	1.45	@	1.50
Australian Wool Pouches	2.00	@	2.25
Heavy Baling Bagging	1.40	@	1.50
Paper Mill Bagging	.90	@	1.10
Bagging No. 2	.50	@	.55

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.05½	@	.06
New White No. 2	.03½	@	.04
Silesias No. 1	.04	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.05½	@	.06
Blue Cheviot	—	@	4.65
Fancy	.0185	@	.0195
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	.04	@	—
New Black, soft	.04	@	.0434
Khaki Cuttings	.03½	@	.03¾
O. D. Khaki	.03	@	.03¾
Corduroy	.01¾	@	.02
New Canvas	—	@	.03
B.V.D. Cuttings	—	@	.04¾

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.00
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	2.00	@	2.75
Miscellaneous	2.00	@	2.25
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	2.00	@	2.75
Miscellaneous	2.00	@	2.25
Black Stockings	2.50	@	3.00
Roofing Stock			
No. 1	1.17½	@	1.23¾
No. 2	.90	@	.92
No. 3	.72½	@	.80

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.00	@	1.10
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.55	@	1.60
Old Linsey Garments	1.35	@	1.45

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¼	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.10¼	@	—
No. 2 Colored	.09	@	.10
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09¼
Book—			
No. 1 M. F. (Carloads)	6.30	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	½	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.22½	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	42.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	50.00	@	55.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.30
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.55	@	.60
Kraft	1.20	@	1.60
News and Scrap—			
Strictly Overissue	.60	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06	@	—
Fancy Shirt Cuttings	.03	@	—

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